Saddleback Ridge Wind, LLC // Natural Resource Protection Act (NRPA) and Site Location of Development Act applications

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  Review of Saddleback Ridge Wind Project Visual Impact Assessment by James F. Palmer
  (January 21, 2011)

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1. Introduction

On October 29, 2010, Patriot Renewables LLC submitted permit applications under the Site Location of Development Act (L-25137-24-A-N) and Maine Natural Resources Protection Act (L-25137-TG-B-N) for the proposed 33 megawatt (MW) Saddleback Ridge Wind Project located on 1,870 acres primarily in Carthage, Franklin County, Maine. The generation facilities include:

- **Turbines**. Twelve General Electric (GE) 2.75-100 wind turbines with a nameplate capacity of 2.75 MW each. The height of each turbine is 85 meters (approximately 279 feet) to the hub center plus 50 meters (approximately 164 feet) for the rotor blades, resulting in a total potential height of 135 meters (443 feet) to the tip of an upright blade. The turbines will be painted white. Red warning lights will be installed according to Federal Aviation Administration (FAA) guidelines. Typically lights are placed on the two end turbines, and on alternating turbines between them.
- **Transmission line**. A 34.5-kilovolt (kV) underground collector line system buried within the ridgeline access road work limits. The underground collector line will transition to an aboveground transmission line on the access road approximately 900 feet down from the ridgeline road. From there it will continue aboveground, mounted on wood poles, for approximately 6,700 feet down the proposed access road towards Winter Hill Road. The line will transition back underground for the southern most 1,340 feet along the access road and continue underground on Winter Hill Road, in the Town of Carthage right-of-way, for 4,000 feet to Maine Route 2. The line will run along Route 2 for approximately 200 feet, then transition aboveground and cross to the southeastern side of Route 2. From there it will travel south-southeast, mounted on wood poles, through private land for approximately 7 miles along a new transmission line right-of-way between 60 and 100 feet in width (depending on landowner or logistic constraints) to a new substation tap on the Central Maine Power Company (CMP) 115-kV regional transmission line, known as the 229 Line. At the substation, the power will be converted from 34.5 kV to 115 kV. Two sets of poles, each carrying a 115-kV line, will connect the substation to CMP's 229 Line, approximately 1,000 feet south of the substation.

Associated facilities include:

- **Access road**. An approximately 9,635-linear-foot ridgeline road that will connect the wind turbine tower foundations. The ridgeline road will be 32 feet wide through construction, and then narrowed to 12 feet with periodic turnouts for passing vehicles. The remainder of the road will be revegetated.
- **Access road**. An approximately 9, 090-linear foot access road extending from Winter Hill Road to where the turbines will be installed on the ridgeline of Saddleback Mountain. The access road will be 24 feet wide through construction, and then narrowed to 12 feet with periodic turnouts for passing vehicles. The remainder of the road will be revegetated.
- **Building**. An approximately 1,750-square-foot Operations and Maintenance building and 2,050-square-foot parking lot located southwest of the ridgeline near the base of the proposed access road in the existing gravel parking area for the Skye Theater off Winter Hill Road.

- **Communications**. An overhead electric distribution line and fiber-optic cable will connect to the turbines.
- **Substation**. A new substation with three 34.5-kV bays, two of which will be empty, and a new 880-foot access road connecting to Ludden Lane in Canton. The access road will be 24 feet wide, reduced to 12 feet after construction and revegetated.

The report entitled *Visual Impact Assessment Saddleback Ridge Wind Project* by Terrence J. DeWan & Associates was submitted as part of this application (TJD&A 2010). This review concerns the adequacy of the visual impact assessment (VIA), and a visual survey of users on Mount Blue conducted over the Labor Day weekend (Mildner & MacBride 2010).[1]

The remainder of the Introduction summarizes the important changes that *An Act to Implement Recommendations of the Governor's Task Force on Wind Power Development* (hereafter referred to as the Wind Energy Act) made in evaluating scenic impacts from expedited grid-scale wind energy development and how this fits into a standard process of visual impact assessment. The second section evaluates the Adequacy of the Report by focusing on the completeness with which each of the steps in the VIA process are addressed in the *Visual Impact Assessment Saddleback Ridge Wind Project.* The third section reports on the fieldwork and additional studies conducted for this review. The fourth section applies the evaluation criteria to the potential state and nationally significant scenic resources. The final section presents the Conclusions of this review.

1.1 Legislative Background

On April 18, 2008, Governor John Baldacci signed *An Act to Implement Recommendations of the Governor's Task Force on Wind Power Development* (the Wind Energy Act). It establishes a favorable State policy encouraging grid-scale wind energy development in appropriate locations. In particular, it designates a large portion of the state for expedited grid-scale wind energy development. While most environmental impacts are evaluated in the same manner as previously, special provisions are made for scenic impacts.

While the provisions of the Wind Energy Act can be viewed as an effort to simplify and clarify visual impact assessments, questions of interpretation still remain. There are several major determinations that effect how a visual impact assessment is to be conducted.

What is the standard of scenic impact evaluation? The standard is "Unreasonably Adverse," and it only applies to views from significant scenic areas. "The primary siting authority shall determine…whether the development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance;"[2] whether the development "fits harmoniously into the existing natural environment" is explicitly not required.[3]

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[1] For the purposes of this review, aesthetic, scenic and visual impacts will be considered synonymous.
[2] 35-A MRSA, § 3452, sub-§1
[3] 35-A MRSA, § 3452, sub-§1

Is this standard applied to all proposed facilities? It is clear that this standard applies to "generating facilities"—turbines and transportation lines. However, there is the possibility of an exception for certain "associated faculties," making it somewhat less clear how to approach them.[4] Associated facilities include "elements of a wind energy development other than its generating facilities that are necessary to the proper operation and maintenance of the wind energy development, including but not limited to buildings, access roads, generator lead lines and substations."[5]

> "If the primary siting authority determines that application of the standard [unreasonably adverse, not harmonious fit] to the development may result in unreasonable adverse effects due to the scope, scale, location or other characteristics of the associated facilities"[6] then "the primary siting authority shall evaluate the effect of associated facilities of a wind energy development in terms of potential effects on scenic character and existing uses related to scenic character in accordance with Title 12, section 685-B, subsection 4, paragraph C or Title 38, section 484, subsection 3, in the manner provided for development other than wind energy development."[7]

In other words, if the primary siting authority determines that there may be unreasonably adverse impacts under the Wind Energy Act's standard due to the associated facilities, then they shall evaluate the associated facilities using the standards for non-wind projects. Further, "The primary siting authority shall make a determination pursuant to this subsection within 30 days of its acceptance of the application as complete for processing."[8]

What evaluation criteria are to be used? The Wind Energy Act lists six evaluation criteria:[9]

A. **"Significance of...affected scenic resource;"** The Wind Energy Act does not explicitly describe how significance should be considered. One possible interpretation is that all scenic resources are equally significant. Another interpretation might be to distinguish between state and nationally designated scenic resources. However, this difference does not seem to have much to do with scenic quality, *per se*. Perhaps the most appropriate interpretation of this criterion is the significance of scenic quality to the identification and designation of a particular scenic resource. Sometimes the level of significance is indicated in the report responsible for the designation (e.g., designation as significant or outstanding scenic quality in the *Maine's Finest Lakes* or *Maine Wildlands Lakes Assessment* studies, or local, state or national significance on a Nation Register of Historic Places nomination form).

B. **"Existing character of surrounding area;"** The Wind Energy Act explicitly states that whether "a wind energy development fits harmoniously into the existing natural environment in terms of potential effects on scenic character and existing uses related to scenic character is not required."[10] Since harmonious fit cannot be the criterion, perhaps

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[4] 35-A MRSA, § 3452, sub-§2
[5] 35-A MRSA, § 3451, sub-§1
[6] 35-A MRSA, § 3452, sub-§2
[7] 35-A MRSA, § 3452, sub-§2
[8] 35-A MRSA, § 3452, sub-§2
[9] 35-A MRSA, § 3452, sub-§3
[10] 35-A MRSA, § 3452, sub-§1

it is whether perception of the landscape's character type is significantly changed. For instance, does the visible presence of many wind turbines change the perceived landscape character from "wooded hillside with scattered residences," to "industrial facility"?

C. **"Expectations of the typical viewer;"** Viewers may have certain expectations for the visible character of certain scenic resources. For instance, they may expect that views from a particular state park or hiking trail be predominately natural appearing. However, it is reasonable to question the appropriateness of viewer expectations, such as when people describe lands intensively managed for timber as "wilderness." In addition, viewer expectations change in reaction to changed circumstances. A few turbines may be approved because the project is small—once built people's expectations change, making it possible to build additional turbines. Consideration of this incremental cumulative change may be the point of the next criterion.

D. **"Expedited wind energy development's purpose and...context;"** The Wind Energy Act makes it clear that the Legislature believes tapping the state's wind resource is desirable, and has set substantial wind energy generation goals.[11] In addition, the Legislature recognizes that "wind turbines are potentially highly visible landscape features that will have an impact on views."[12] It seems reasonable that the Legislature intended that areas determined to be suitable for grid-scale energy development be utilized to their full capacity. This criterion may require consideration of the wind energy potential of the surrounding context, and evaluating the scenic impacts of fully building-out the area's capacity to produce wind energy. The greatest impact comes from the initial wind turbines built in an area; additional turbines will add a smaller incremental scenic impact, making it very difficult to determine where to stop further development. It may be most responsible to consider potential cumulative wind development impacts to an area as part of an initial proposal.

E. **"Extent, nature and duration of the... public use of the scenic resource... and the... effect... on the public's continued use and enjoyment of the scenic resource;"** This evaluation criterion says that we need to know what activities are occurring at significant scenic resource sites, how many people engage in these activates, for how long, and what the impact of seeing the project will have on the enjoyment of these activities. Said another way, "Is an Adverse scenic impact Unreasonable if turbines are only visible from a rarely visited viewpoint, or is visible only to people engaged in an activity for which scenic quality is not central to its enjoyment?"

F. **"Scope and scale of the... effect of views of the generating facilities... including... number and extent of [visible] turbines, ... distance [to visible facilities]... and effect of prominent features of the development on the landscape"** The issue is whether the generating facilities become dominating elements in the landscape, primarily because of their proximity to the viewer and the area they occupy in the visual field.

What constitutes a significant scenic resource? The Wind Energy Act specifies that only designated state or nationally significant scenic resources be evaluated and provides a list of

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[11] 35-A MRSA, § 3402, sub-§2

[12] 35-A MRSA, § 3402, sub-§2(C)

qualifying designations. In this review further reference to scenic resources will assume that they are state or nationally significant.

- A national natural landmark, federally designated wilderness area or other comparable outstanding natural or cultural feature.
- A property listed on the National Register of Historic Places.
- A national or state park.
- A great pond identified as having outstanding or significant scenic quality in the *Maine's Finest Lakes* study or *Maine's Wildlands Lakes Assessment.*
- A segment of a river or stream identified as having unique or outstanding scenic attributes in the *Maine Rivers Study.*
- Viewpoints from state public reserve land or on a trail that is used exclusively for pedestrian use, as designated by the Department of Conservation.
- Scenic turnouts on scenic highways constructed by the Department of Transportation.
- Scenic viewpoints located in coastal areas that are ranked as having state or national significance in terms of scenic quality in inventories published by the Executive Department, State Planning Office.

While a major step toward specificity, it is anticipated that interpretation of this list will be contested. For instance, this list includes resources typically designated for non-scenic reasons (e.g., national landmark or listed historic place), and only minor portions of resources that are designated for scenic reasons (e.g., only the turnouts of a scenic byway). In addition, "the public [must have] a legal right of access" if the significant scenic resources is not on public land (e.g., listed historic place or coastal viewpoint).[13]

What is the area of potential effects (APE)? The regulations presume that potential scenic impacts to scenic resources must be evaluated within 3 miles of generating facilities (i.e., turbines and transmission lines). The primary siting authority may also require the evaluation of potential scenic impacts to state and nationally significant scenic resources located between 3 and 8 miles from generating facilities if there is substantial evidence that it is needed.[14] Interested parties have 30 days after the acceptance of the application to submit such information.[15] The Wind Energy Act states that scenic impacts from generating facilities (i.e., turbines or transmission lines) located 8 or more miles from a scenic resource are "insignificant."[16]

Process of Conducting a Visual Impact Assessment

While the Wind Energy Act has identified specific resources from which views are to be considered and established criteria and a standard for their evaluation, there is no apparent reason that the process by which a visual impact assessment (VIA) is conducted would be changed. While there are slight variations, a professionally conducted VIA includes the following:

1. **Project Description**. The purpose and context of the project must be described, as it is one of the evaluation criteria.[17] In addition it is necessary to describe the visible attributes of the generating and associated facilities.

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[13] 35-A MRSA, § 3451, sub-§9
[14] 35-A MRSA, § 3452, sub-§4
[15] 35-A MRSA, § 3452, sub-§4
[16] 35-A MRSA, § 3452, sub-§3
[17] 35-A MRSA, § 3452, sub-§3,criterion D

2. **Landscape Character**. The description of the landscape character establishes the context for evaluating any visual change from introducing the proposed development.[18] What is the visual character of the landform and vegetation? What is the visual character of the settlement pattern and road network? How does the project site relate to the larger regional landscape context—is it unusual or mundane? The US Forest Service describes landscape character this way:

> Landscape Character descriptions are a combination of the objective information contained within ecological unit descriptions and the cultural values that people assign to landscape. Together they help define the meaning of "place", and its scenic expression (USDA FS 1995, page 1-1).

The regional landscape character is described first. Often there are several distinct landscape units to describe. The character (e.g., ecological zone) and scenic attractiveness (e.g., vividness, intactness, unity) of each landscape unit is summarized (USDA FS 1995, page 1-15). A somewhat more detailed description is given for the project site and its APE.

Visibility Analysis. A visibility or viewshed analysis identifies those areas with potential views of the proposed development. The minimum professional standard is to map the topographic viewshed for the highest point of each major project element. This shows those areas that have a potential view of the tip of an upright turbine blade if all land cover were removed. Since it is possible that views to a project could be opened by the removal of land cover, a topographic viewshed is considered a useful conservative assessment of the maximum area of potential project visibility.

Typically, a second visibility analysis includes the screening effect of forest cover. However such analyses should be used with caution and carefully field checked, since vegetation data can change quickly. The three forest classes (deciduous, evergreen and mixed) of the National Land Cover Database are most commonly used. Forest height is typically set to a regionally appropriate 40 feet for the analysis, though the minimum tree height for the three forest classes is 16 feet. This use of generalized rather than location specific tree heights is another reason to use the vegetated visibility analysis with caution.

Addition visibility analyses might show how many turbines are visible, or the viewshed for larger portions of each project element (i.e., the nacelle rather than the upright blade tip). Current practice has been to only evaluate visibility of the turbines, but the transmission line must also be considered. It may also be appropriate to include associated facilities, such as access roads, substation, maintenance building and other structures.

Normally only views from scenic resources within the topographic viewshed are evaluated in detail (though the accuracy of the analysis must field checked). A visibility analysis may also be helpful in describing the potential number, extent, and distance of visible turbines.[19]

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[18] 35-A MRSA, § 3452, sub-§3, criterion B

[19] 35-A MRSA, § 3452, sub-§3, criterion F

3. **Significant Scenic Resources**. Identify the state or nationally significant scenic resources within the study area, based on the list in the statute.[20] A description of each identified scenic resource needs to be presented in sufficient detail that the criteria for evaluating scenic impacts can be applied.[21] Each scenic resource will be documented as part of the fieldwork, include the general scenic character of the resource, the "worst case" potential views of the proposed development, and perhaps other views.
4. **Public Use and Expectations**. The extent, number and duration of public uses of the identified scenic resources, and the expectations of the "typical viewer" must be described.[22]
5. **Evaluation of Potential Impacts**. The findings from applying each of the criteria for evaluating scenic impacts should be reported.[23]

   Accurate visual simulations are particularly useful when conducting this evaluation. The selection of viewpoints for the visual simulations is frequently a source of controversy. Opponents are likely to want simulations that represent "worst case" views, while the developer and other proponents will argue that "typical views" provide a fairer representation. Worst case views are closer, show larger portions of the project, represent situations where the project appears less compatible with its surroundings. Typical views normally do not show the project at its worst, but are at viewpoints that might have may viewers, or that are selected to represent a diversity of viewing conditions (e.g., distances from the project, types of screening, and levels of incompatibility). It is very unusual for a scientific method (i.e., random sampling) to be used to select the typical viewpoints—normally they are simply declared "typical" by the analyst. Both types of simulations are useful to decision makers. However, it is difficult to imagine why they would not want to be aware of the very worst case situations.
6. **Mitigation**. It is normal in a professional VIA that the approaches taken to mitigate adverse effects are described. Typically, if Unreasonably Adverse scenic impacts were found, approaches to further mitigation would be discussed. This might include revisions to project siting or design, or screening at impacted viewpoints. However, mitigation is not one of the evaluation criteria for scenic impacts.[24] The Attorney General's Office has advised both DEP and LURC that it does not believe mitigation can be required for scenic impacts—if scenic impacts are Unreasonably Adverse, the project should be denied, other wise it should be approved.

2. Adequacy of the Report

This section reviews what the *Visual Impact Assessment Saddleback Ridge Wind Project* by Terrence J. DeWan & Associates (TJD&A 2010) reported for each portion of a standard VIA process. This will include the visual survey that was conducted of users on Mount Blue over

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[20] 35-A MRSA, § 3451, sub-§9
[21] 35-A MRSA, § 3452, sub-§3, criterion A
[22] 35-A MRSA, § 3452, sub-§3, criteria E and C
[23] 35-A MRSA, § 3452, sub-§3
[24] 35-A MRSA, § 3452, sub-§3

Labor Day weekend (Mildner and MacBride 2010). This review is supported by two days of fieldwork on December 2 and 3, 2010 visiting the identified scenic resources within 8 miles of the proposed project. In addition, the geographic information system (GIS) data used for the VIA were reviewed and additional analysis conducted. In particular, a standard visibility analysis was performed using ArcMap software, and the visual simulations were compared to a three-dimensional ArcScene model to determine representational accuracy.

2.1 Project Description

The project's elements are described (TJD&A 2010, page 1, 6-10). The visible characteristics of the turbines that are described include color, height to the hub center and tip of an upright blade, rotor movement, and hazard beacons. However, the transmission line (also part of the "generation facilities") description only includes the route, length, width of cleared ROW, and whether it is above or underground. There is no description of the electric poles (e.g., type, height, material, color) and conductors (e.g., reflective or non-reflective). "Associated facilities" include the operations and maintenance building, access roads, and substation are also described. There are no scaled drawings of the turbines, electric poles, or other project elements, such as the extent of cut-and-fill associated with the roads. Maps (especially TJD&A 2010, Map E on page 32) show the location of each turbine and the transmission line.

2.2 Landscape Character

The VIA describes the landform, water resources, vegetative patterns and cultural character of the area surrounding the proposed project (TJD&A 2010, pages 10-15). The major features are identified, including each of the state or nationally significant scenic resources. This description is interspersed with comments about whether the project may be visible from particular areas.

2.3 Visibility Analysis

TJB&A used WindPRO to conduct the visibility analysis using the National Elevation Dataset 1/3 Arc-Second (NED 1/3), which is "the best available raster elevation data for the conterminous United States" (USGS 2009a). The NED 1/3 arc-second data has a resolution of about 10 meters with a with $\leq$ 4 meter absolute vertical height accuracy (USGS 2009b). The VIA includes a topographic viewshed map as Map A that indicates areas where as many as 1 to 6 and 6 to 12 turbine blade tips may be visible. A small problem is that it is unclear into which group a view of 6 blade-tips would be put.

There is also a visibility map that takes into account the screening effect of forest trees. Maine Land Cover Data (MELCD) were used rather than the National Land Cover Data (NLCD). While comparable, MELCD includes classes for harvested forest, while the NLCD does not "The assumed heights for existing vegetation are: Deciduous Forest – 40', Mixed Forest – 40', Wetland Forest – 30', Light Partial Cut – 40', Evergreen Forest – 40', Heavy Partial Cut – 40', and Regenerating Forest – 20'" (TJD&A 2010, page 3). Light Partial cut could have 50 percent of the canopy removed, Heavy Partial Cut may have only 10 percent of the tree canopy remaining, and Forest Regeneration could be seedlings just a couple feet tall. In addition, Forested Wetland can have total vegetation coverage as low as 20 percent. It seems inappropriate to depend on these three classes for full screening. It would be my preference to limit screening vegetation to the three forested classes (Deciduous, Evergreen, and Mixed).

The text indicates that the analysis would "determine where any part of any of the turbines, access roads, or transmission line may be visible." However, only turbine visibility is shown on Maps A and B. There is no indication that the transmission line, which is a "generation facility," was considered in the analysis. In addition, the required 3 mile study area around the transmission line extends beyond the 8 mile study area for the turbines.

In addition to the two visibility maps, there are tables that list all of the great ponds and the places listed on the National Register Historic Places, and whether they have a potential view of the project, how many turbines are potentially visible, and the distance to the nearest turbine. The visibility reported in these tables seems to be informed by the field work as well as the visibility maps.

The concept of distance zones is presented in section 5.2 of the VIA. The thresholds that are listed were developed by the USDA Forest Service for the more arid western part of the country, and may not be appropriate for the more humid conditions in the northeast. In any case, the perceptual definition of distance zones is what really matters, and wind turbines confound these traditional thresholds. So, the foreground for a wind turbine may be less than a half-mile because they are composed of smooth materials without much apparent texture, and foreground is defined as the distance where "the observer would be able to detect surface textures, details, and a full spectrum of color (TJD&A 2010, p. 15). However, the middle distance may extend further than 4 miles because the basic elements of a turbine are so large that they remain recognizable at distances where most naturally occurring landscape elements (e.g., trees) have ceased to be individually recognizable. Objects, such as trees or buildings, or groupings of objects in the landscape are most obvious at this distance and create a characteristic visual pattern or texture—"within this zone the details found in the landscape become subordinate to the whole. ... [and] development patterns are readily apparent" (TJD&A 2010, p. 15). I believe that this is fundamentally the reason why the threshold where wind turbines were determined to no longer have a significant potential impact was set at 8 miles by the Wind Energy Act. This is the beginning distance of the background for the current generation of grid-scale wind turbines, where atmospheric effects and distance result in a simplified image—"texture has disappeared and color has flattened, but large patterns of vegetation or rock are still distinguishable, and landform ridgelines and horizon lines are the dominant visual characteristics" (USDA 2000, p. 4-11). While turbines may be visible beyond 8 miles, they will be relatively indistinct and it may not be possible to detect the motion of the blades.

2.4 Significant Scenic Resources

As part of the Project Study Area, Existing Character of the Surrounding Area (section 5.1), the VIA identifies some important local as well as state and nationally significant scenic resources within 8 miles of the proposed wind turbines. The state and nationally significant scenic resources includes 1 great pond with outstanding scenic quality (TJD&A 2010, Table 1), and 7 sites listed on the National Register of Historic Places (TJD&A 2010, Table 2). However, one of the historic sites is a private residence and farm, so is unlikely meet the public's legal right of access (e.g., John G. Coburn House).[25] In addition, there is one State Park—Mount Blue State Park (which includes Mount Blue, Farmhouse Turnout and the Webb Lake Campground) and one area of Maine Public

[25] 35-A MRSA, § 3451, § 9

Reserved Land designated by the Department of Conservation as a scenic resource—Perkins Lot (DOC 2010).

Information about the scenic resources identified in the VIA is provided in tabular form for great ponds and historic sites, including name, distance to nearest turbine, and number of turbines potentially visible. The State Park and Public Reserve Lands are described in the text, but not summarized in tabular form. This information is summarized in Table 1 below for the state and nationally significant scenic resources. A brief description of those scenic resource within the topographic viewshed is included in the VIA section 6.0 Visual Impacts on Scenic Resources of State or National Significance, and located on Viewshed Maps A and B.

Table 1. Summary of Scenic Resources of State and National Significance within 8 Miles of the Generating Facilities as Identified by TJD&A

Scenic Resources of State or National Significance in the Surrounding Area	Distance to Nearest Turbine (miles)	Number of Turbines Visible
Historic Sites		
John G. Coburn House†	5.0	up to 12 filtered
Goodspeed Memorial Library	7.0	0
Bass Boarding House	7.0	0
North Jay Grange Store	7.8	0
Jay-Niles Memorial Library	7.8	8± filtered
Temple Intervale School	7.8	0
Weld Town Hall	5.8	0
State Parks		
Mount Blue State Park—Mount Blue summit	7.4‡	5‡*
Mount Blue State Park—Farmhouse Turnout	6.9‡	12‡
Mount Blue State Park—Webb Lake Campground	Not given	Not given
Great Ponds		
Halfmoon Pond	5.4	Small portions of blades from 6 turbines
Maine Public Reserve Land		
Perkins Lot—Bald Mountain near summit#	1.6‡	8‡

† John G. Coburn House is privately owned and the public does not have a legal right of access, so it does not qualify as nationally significant scenic resources under 35-A MRSA, § 3451, § 9.

‡ Taken from text; not summarized in the tables.

* Seven additional turbines will be visible beyond the 8-mile threshold of potential significant visual impact.

The Farmhouse Turnout (aka Overlook) was misnamed the Center Hill Overlook in the VIA.

2.5 Visual Simulations

Visual simulations are a primary tool to investigate the impact to significant scenic resources. TJD&A prepared five photosimulations as part of their VIA. Each simulation is based on a photograph taken with a digital camera capable of capturing images 4288-by-2848 pixels. A prime lens was used to assure that all the images had the same focal length. In this case the lens' focal length was 35 mm with a 37.3° horizontal angle of view, which is very close to the

convention for a "normal" lens. The location of each photograph is "tagged" using a Jobo photoGPS. Basic information about the photographs used in the simulations is presented in Table 2.

Table 2. Establishing Viewing Distance for the VIA Photosimulations

Simulation	Location	Camera	Focal Length	Equivalent Focal Lens†	Horizontal Angle	Simulation Width	Viewing Distance
1A	Mount Blue	D70	35 mm	53.4 mm	37.3°	13.75"	20.4
2A	Farmhouse Turnout*	D70	35 mm	53.4 mm	37.3°	13.75"	20.4
3A	Webb Lake	D300	35 mm	53.4 mm	37.3°	13.75"	20.4
4A	Perkins Lot	D300	35 mm	53.4 mm	37.3°	13.75"	20.4
5A	Halfmoon Pond	D70	35 mm	53.4 mm	37.3°	13.75"	20.4

† Using Nikon's DX format (23.6mm-by-15.7mm). http://www.isotton.com/misc/lens-angle-calculator/

* The Farmhouse Turnout (aka Overlook) was misnamed the Center Hill Overlook in the VIA.

TJD&A uses WindPRO to prepare a digital perspective drawing of the wind turbines and the horizon line as seen from the same location and using the same "lens" as the photograph used. This horizon line is based only on topography and is limited to the extent of the study area. This drawing is superimposed over the photograph and the simulation technician registers them by matching the topographic horizon line to the horizon line of the photograph, as shown in Figure 1. This registration must take into account the height of the trees that are typically covering topography in the photo. WindPRO has tools to assist in removing parts of the turbines that are behind landscape elements in the photograph and making other adjustments. Sometimes PhotoShop may also be used to graphically clean up the image.

The photosimulations presented in the VIA appear generally accurate and well constructed. The only problem identified at this stage is that the photograph used for Photosimulation 1A from Mount Blue has a resolution of 2124-by-1424 pixels rather than 4288-by-2848 pixels. The resolution of the image is important because at this distance the turbines are on the edge of where they are easily recognized. We can distinguish parts of an object that occlude 1 minute to as little as half a minute (for those of us with excellent vision). If the horizontal angle of the photograph is 37.3° then there is just less than one pixel in an image that is 2124 pixels wide to represent an object that would occlude a 1 minute arc, while an image that is 2848 pixels wide has to pixels.

An additional analysis of the simulations is presented in section 3.3 Visual Simulations.

2.6 Public Use and Expectations

Section 6 of the VIA attempts to provide a description of the extent, nature, and duration of public uses, and the typical viewer's expectations for scenic resources that the topographic visibility analysis indicated had the potential of views to the Project. However, with one exception described below, these descriptions are very brief and do not include information about the number of users or their length of stay. The nature of the use appears to be based on common sense or perhaps brief descriptions located through an internet search. Similarly, the description of viewer expectations appears to be based on conventional wisdom rather than any systematic investigation—at least the VIA does not cite any sources to substantiate the assertions of public use and viewer expectations.

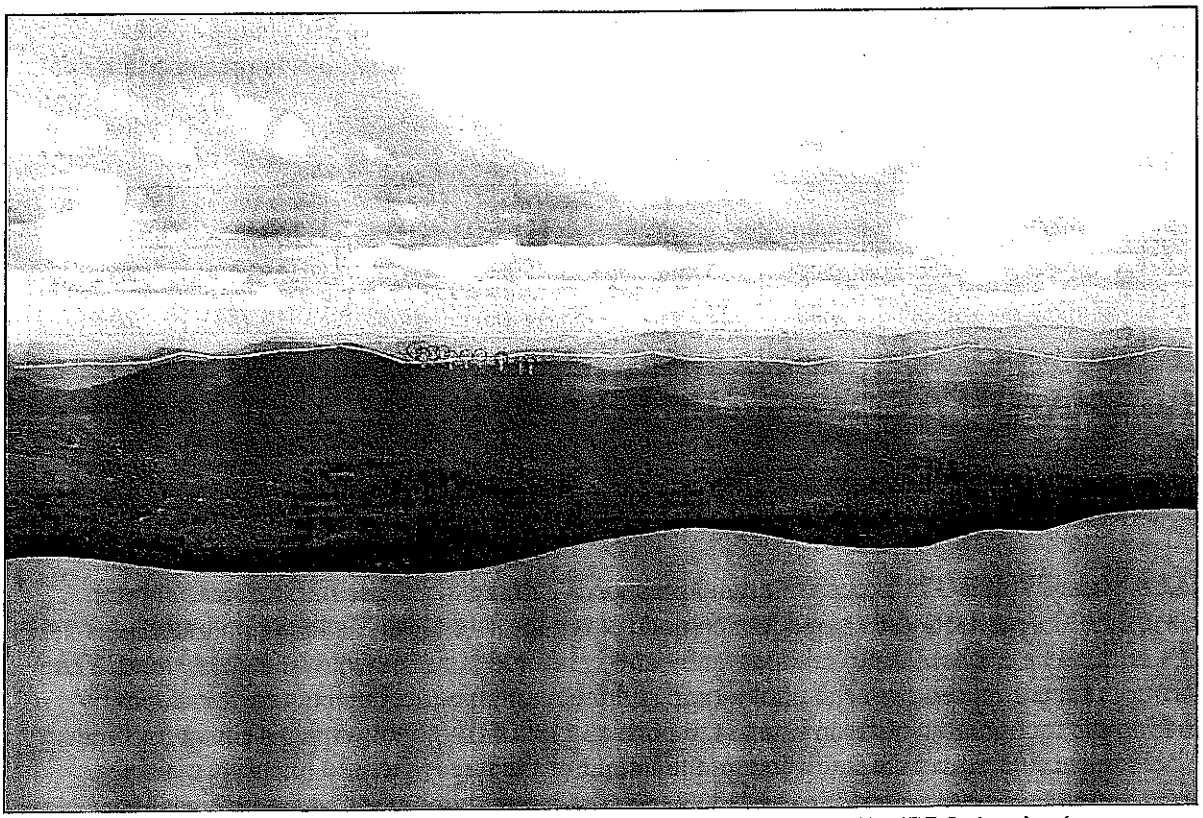

Figure 1. A draft of Photosimulation 1A from Mount Blue showing how the WindPRO drawing is registered to the photograph by aligning the ridge line. Later drafts will remove the ridgeline, incorporate realistically rendered drawings of the turbines, and remove parts of the turbine that are not visible behind the mountain ridge. *Source:* TJD&A.

This lack of real information is not surprising. It is unusual to find a park or other scenic resource with accurate visitation numbers, let alone length of stay, types of activities, the nature of visitor expectations, or the quality of their experience. The Maine State Comprehensive Outdoor Recreation Plan (SCORP) primarily reports statewide statistics rather than statistics for specific parks (Maine DOC BPL 2009).

Recognizing the lack of information to responsibly address the Wind Energy Act's Evaluation Criteria concerning public use and expectations, the Department of Environmental Protection has encouraged wind energy developers to conduct a survey from at least one scenically significant resource to better understand these issues. Patriot Renewables commissioned a survey of visitors to Mount Blue over the Labor Day weekend. This site was chosen because it has prominent views of the project, and it was anticipated that there might be more visitors than at other scenic resources where the project will be visible. Twenty-two interviews were conducted by Market Decision on the top of Mount Blue on September 5 and 6, 2010 with a clear view toward the Saddleback Ridge Wind site (Mildner and MacBride 2010). The general reported findings include:

- Fourteen groups with 30 adults and 10 children visited Mount Blue during two days of the Labor Day weekend. One group had 10 people; the median group size was 2.3 people.

- In general, the scenic rating of the actual view was comparable to the photograph of the view.
- The apparent scenic impact the proposed turbines reduces the scenic rating by over 1.2 points on a 7-point scale. This scenic impact is statistically significant.
- In general, visitors thought that the proposed turbines would have a little effect on their recreation experience.

Further review and analysis of this study are included later in this review.

2.7 Evaluation of Potential Scenic Impacts

Logically, the information about the project, surrounding area, and scenic resources' character and use should be presented first in a VIA. Then the scenic impact and whether it is Not Adverse, Adverse, or Unreasonably Adverse can be systematically evaluated by applying the Evaluation Criteria to what is presented about each scenic area and their views of the proposed development. By and large this is the way that the *Visual Impact Assessment Saddleback Ridge Wind Project* presents the information and evaluation using the following framework, which rearranges the Evaluation Criteria slightly but retains their substance.

- **Context.** The existing character of the surrounding area and the context of the proposed activity. (§ 3452.3.B and 3452.3.D).
- **Significance**. The significance of the potentially affected scenic resource of state or national significance (§ 3452.3.A).
- **Public Uses**. The extent, nature and duration of potentially affected public uses of the scenic resource of state or national significance. (§ 3452.3.E).
- **Viewer Expectations**. The expectations of the typical viewer who would be using or enjoying the scenic resource of state or national significance. (§ 3452.3.C).
- **Project Impact.** The scope and scale of the potential effect of views of the Project on the scenic resource of state or national significance, including but not limited to issues related to the number and extent of turbines visible from the scenic resource of state or national significance, the distance from the scenic resource of state or national significance, and the effect of prominent features of the development on the landscape. (§ 3452.3.F).
- **Potential Effect on Public Use**. The potential effect of the generating facilities' presence on the public's continued use and enjoyment of the scenic resource of state or national significance. (§ 3452.3.E).
- **Conclusion**. A determination of whether the development significantly compromises views from a scenic resource of state or national significance such that the development has an unreasonable adverse effect on the scenic character or existing uses related to scenic character of the scenic resource of state or national significance. (§ 3452.1). (TJD&A 2010)

This approach is systematic and clearly related to the Wind Energy Act's evaluation criteria. However, it is recommended that each criterion be more clearly and completely defined. The identification of indicators for evaluating each criterion would be a desirable addition.

The VIA evaluates 5 of the 10 identified significant scenic resources within 8 miles of the project turbines. The primary criterion of whether to evaluate a scenic resource or not appears to be whether it was found to have potential views of the project based on TJD&A's Viewshed Map B and field verification, as summarized in Table 1.

2.7.1 John G. Coburn House

Context: It is difficult to see how this description would be useful in evaluating scenic impact. There is no consideration of scenic qualities, and while it is indicated there are photographs, no explanation or interpretation is given.

Significance: It is made clear that this is a private residence that is not open to the public. **It should state clearly that this means the site does not meet the Wind Energy Act's requirements to be a significant scenic resource because it does not provide "the public ...a legal right of access."**[26]

Public Uses: It clearly states that there are no public uses.

Viewer Expectations: Expectations of the private owners are assumed, but they should not have been. The evaluation criteria are only concerned with public viewers.

Project Impact: The potential visibility is described in vague terms. No simulation is provided or analysis conducted.

Potential Effect on Public Use: The project is described as having no effect on public use since there is no public access.

Conclusion: "The Project should not compromise views from the John G. Coburn House or its setting. The Project should not have an unreasonable adverse effect on the scenic character or the uses related to the scenic character of this historic property" (TJD&A 2010, page 17). No simulation or real analysis is presented to demonstrate that the filtered views would not be adverse. However, the proper conclusion is that while the house is listed on the National Register, it does not meet the Wind Energy Act's public access requirement and should not be evaluated further.

2.7.2 Jay-Niles Memorial Library

Context: It is difficult to see how this description would be useful in evaluating scenic impact. There is no consideration of scenic qualities, and while it is indicated there are photographs, no explanation or interpretation is given. For instance, is there anything about the siting of the library that encourages views toward the project?

Significance: The description only includes information of local use without reference to the reasons it was nominated.

Public Uses: The library is open to the public, but there is no description of how many users there are and the role of scenic experience in their uses. *Viewer Expectations:* It is simply

[26] 35-A MRSA, § 3451, § 9

presumed viewer expectations are high, but there is no attempt to document whether scenic expectations even exist.

Project Impact: That there will be turbine views in both the winter and summer is stated in the VIA. A photosimulation showing the hubs of six turbines, and portions of blades from a couple more is presented in the VIA Supplemental Information (TJD&A 2011, page 14). Distance to the turbines is nearly 8 miles.

Potential Effect on Public Use: It is stated that there will be no impact, since it is assumed that scenic views are not part of the reason people go to this library. However, there is no documentation about this.

Conclusion: "The Project should not compromise views from the Jay-Niles Memorial Library or its setting. The Project should not have an unreasonable adverse effect on its scenic character or the uses related to the scenic character of the historic property" (TJD&A 2010, page 18). Since no simulation was prepared and apparently there was no analysis, it is unclear how this conclusion was reached.

2.7.3 Mount Blue State Park—Mount Blue Hiking Trail

Context: Mount Blue is one of several mountains that are in close proximity around Webb Lake, including Saddleback and Spruce Mountains, where wind projects are proposed. It is difficult to see how this description would be useful in evaluating scenic impact, since there is no consideration of scenic qualities and how a wind project might fit or conflict with this context.

Significance: Mount Blue is described as a visual focal point and scenic recreation destination with the park. It is stated that the park "receives roughly 70,000 visitors each year," but not how this relates to its significance.

Public Uses: The description of the trail landscape might better be placed under Context. There is no description of the "extent, nature and duration" of uses, even though a survey of trail users was conducted.

Viewer Expectations: Survey results indicate people "had many reasons for hiking Mount Blue"—though this would seem better placed under Public Uses. Their rating of the existing view photo is reported as 5.5 on a 7-point scale, though it is not clear how this relates to expectation.

Project Impact: The "scope and scale" is presented, including the number of turbines and the amount of the horizontal visual field that the project occupies. However, much more effective use should be made of the Photosimulation 1 images. "For hikers, the view of the five wind turbines within eight miles will present a contrast in form, line, and color in a largely natural landscape. However, the turbines will appear to be relatively small when compared with the surrounding mountains and should not present an unacceptable contrast in scale (TJD&A 2010, page 21). This assertion is simply made without reference to results from the survey.

Potential Effect on Public Use: It is reported that the scenic impact rating drops 1.2 points on a 7-point rating scale—a meaningful as well as statistically significant decrease. This result might better have been reported under Project Impact. More to the point, the survey also found respondents overall did not think the project would significantly change their experience or change the likelihood that they would return.

Conclusion: "The Project should not significantly compromise views from Mount Blue, nor should it have an unreasonable adverse effect on its scenic character or the uses related to the scenic character of the State Park" (TJD&W 2010, page 22). These conclusions are not strictly in agreement with the survey results, which indicate that one portion of the several views from Mount Blue will be significantly affected (i.e., the view will be "compromised"). However, overall those interviewed did not think that this would change their enjoyment or likelihood of returning. These results are not accurately or full reported.

2.7.4 Mount Blue State Park—Center Hill "Ledged"

This area is described in the VIA Supplemental Information (TJD&A 2011).

Context: The Center Hill Picnic Area is one of the more visited locations within Mount Blue State Park. It includes parking lot, picnic facilities, outhouse and interpretive sign. There is a panoramic view of the mountains to the northwest toward Tumbledown Mountain, but the project is not visible.

The "Ledges" are at the end of the Center Hill Scenic Trail, an approximately 0.2 mile walk that begins at the Center Hill Picnic Area (Farnham 2011). The "Ledges" has a wide panorama view over foreground vegetation, toward Webb Lake and the distant mountains, including the project well to the south of Webb Lake. The actual view is comparable to the view from the Farmhouse Turnout, except for the presence of foreground woody vegetation and the walk through he woods to reach the "ledges."

Significance: It is stated that this is one of the easily accessed panoramic views within the park.

Public Uses: The estimate given for use of the picnic area is 15,000 visitors (Best 2011). The VIA Supplemental Information cites a personal communication with Best that estimates 10 percent of this number may walk to scenic trail to the "Ledges." In my emails with Gary Best, I was referred to Park Manager Bruce Farnham (2011), who estimated that 75 percent of the people walk the scenic trail.

Viewer Expectations: It is assumed that the expectation for a panoramic view at the end of a "scenic trail" will be high.

Project Impact: The project will not be visible from the picnic area. Five turbines are said to be within the 8-mile scenic impact zone, though the fifth one is right on the line. The horizontal angle they will occupy is given and the photo simulation is referenced, but no assessment of the impact *per se* is given.

The photosimulations prepared by TJD&A (2011, page 3) and Lawrence (2010, page 33) both show 12 turbines at a distance of nearly 8 miles and are essentially the same. Specifically, the turbines have essentially the same visual magnitude in both simulations.

Potential Effect on Public Use: "The view of the wind turbines will present a contrast in form, line, and color in a largely natural landscape. The turbines will be seen as distinct, though minute objects on Saddleback Ridge. The presence of the turbines may have a negative effect on some peoples' enjoyment of the views from the overlook or the picnic area. However, it is likely that an equal number may be drawn to the site for the express purpose of seeing the turbines" (TJD&A 2011, page 4). There is no support for this statement, but it is similar to what the hikers on Mount Blue indicated.

Conclusions: "The Project will not significantly compromise views from the overlook at the end of the scenic trail at Center Hill Overlook and will not have an unreasonable adverse effect on the scenic character or the uses related to the scenic character of the area" (TJD&A 2011, page 5). This statement is only supported primarily by the fact that the turbines are far away and occupy a very small part of the total visual field.

2.7.5 Mount Blue State Park—Farmhouse Turnout

The Farmhouse Turnout (aka Overlook) is incorrectly identified as the Center Hill Overlook in the VIA.

Context: This site has a wide and open panorama over Webb Lake and toward the distant mountains, including the project. It is not made clear that this site is located near the park headquarters and may function as a stop for most visitors seeking information to orient themselves to the park. It is not clear where the Project would be seen in this view—much more effective use should be made of the Photosimulation 2 images.

Significance: It is stated that this is one of the only easily accessed panoramic views. There is no attempt to describe the significance of the park or of this location in the park (e.g., it may be that most visitors stop here).

Public Uses: The description includes several assumed activities, but nothing about their extent or duration.

Viewer Expectations: They are assumed to be high without documentation.

Project Impact: The whole project will be visible, occupying approximately 6 percent of the panorama's horizontal angle of view. The simulation from this location is referenced, but there is no additional analysis. It is assumed that the turbines would have a "relatively minor impact on the public's use and enjoyment" because the turbines are so far away. However, there is no documentation of this (e.g., will people be more or less likely to use the picnic tables if the Project is constructed?). This view is a bit closer and lower than the view from mount Blue, but shares the drama of a wide open panorama. The impact of to the Mount Blue view was statistically significant.

Potential Effect on Public Use: "For picnickers and other users, the view of the wind turbines will present a contrast in form, line, and color in a largely natural landscape. The turbines will be seen as distinct, though minute objects on Saddleback Ridge. The presence of the turbines may have a negative effect on some peoples' enjoyment of the views from the overlook or the picnic area. However, it is likely that an equal number may be drawn to the site for the express purpose of seeing the turbines" (TJD&A 2010, pages 22-23). There is no support for this statement, but it is similar to what the hikers on Mount Blue indicated.

Conclusions: "Should not have an unreasonable adverse effect on the scenic character or the uses related to the scenic character of the picnic area / overlook" (TJD&A 2010, page 23). This statement is only supported by assumptions. However, the survey did find that the scenic value of a panorama from further away was significantly reduced, though that reduction would not affect the experience of hikers or the likelihood they would return. We do not know how it would affect picnickers and people stopping to use a scenic overlook.

2.7.6 Mount Blue State Park—Webb Lake Campground

This portion of Mount Blue State Park is addressed in the VIA Supplemental Information (TJD&A 2011).

Friends of Maine's Mountains submitted a report asserting that there were views of the turbines from the "Beach" in Mount Blue State Park. In actuality, the viewpoint referenced was substantially north of the "Beach" at the end of the shoreline trail near the Northern Group Camping Shelter. TJD&A's (2011) prepared an analysis from this viewpoint as part of their VIA Supplemental Information. It is organized in response to Lawrence's assertion, and it not as clearly organized as the evaluation in their VIA. However, the salient points can be extracted.

Context: The Webb Lake Campground is the most developed area of Mount Blue State Park and receives the most visitors. It is mostly forested and has approximately a mile of shoreline on the lake. Because of the forest cover, the project will not be visible from most areas within this portion of the park, including the "Beach" and designated camp sites. There is a view of most of the turbines from the shoreline near the Northern Group Camp Site.

Significance: This area of the shoreline is only close to the Northern Group Camping Shelter, which is not the site of any organized activities.

Public Uses: This shoreline is near the Northern Group Camping Shelter and is assumed to be used by users of this facility, approximately 2,500 people annually. Specific uses are not described.

Viewer Expectations: They are assumed to be very high and similar to other users of Mount Blue State Park.

Project Impact: The photosimulations prepared by TJD&A (2011, page 8) and Lawrence (2010, page 26) both show 11 turbines at a distance of approximately 6 miles and are essentially the same. Specifically, the turbines have essentially the same visual magnitude in both simulations, occupying an approximately 15° horizontal angle of the panoramic view.

Potential Effect on Public Use: Not described.

Conclusions: "While the turbines will be prominently visible in the distance to someone standing on the shoreline near the North Shelter Group Camping area, they will be screened by vegetation from the waterfront trail and will not be visible from the group shelter itself. From the water's edge the turbines will be visible at the edge of the panoramic view but will not interfere with the view toward Mt. Blue, which is the primary focal point on the west half of the lake. The turbines should have a slight to moderate effect on the view from the water's edge and no effect on the view from the land" (TJD&A 2011, page 11). This conclusion seems to be based on the relatively low number of users, distance from the turbines, and assumed focal point of the view (Mount Blue to the east rather than the turbines along the shore to the south), rather than an analysis of user expectation and use.

2.7.7 Mount Blue State Park—Hedgehog Hill

This area is described in the VIA Supplemental Information (TJD&A 2011). However, the site was not investigated during the fieldwork.

Project Impact: The photosimulation prepared by TJD&A (2011, page11) shows how topography obscures the view all but one or two turbines, and that the blades of these turbines will be obscured by vegetation in the summer, and be difficult to distinguish in winter.

2.7.8 Halfmoon Pond

Context: The pond is described as "a high complexity of surrounding relief and a partially blundered shoreline." The surrounding area is described as having "been heavily cut in recent years, with extensive patterns of skidder trails and log yards" (TJD&A 2010, page 23). As stated, it is difficult to see how this description would be useful in evaluating scenic impact.

Significance: It is stated that the pond is a significant scenic resource.

Public Uses: All public uses are assumed without documentation. There is no attempt to describe the "extent, nature and duration of potentially affected public uses of the scenic resource."

Viewer Expectations: It is simply assumed without documentation that expectations are for high scenic quality, though they may be tempered by recent commercial logging activity.

Project Impact: It is stated that the tops of up to six turbines may be visible" (TJD&A 2010, page 24). There is reference to Photosimulation 5, though I was unable to see the tops of any turbines in it until they were pointed out to me. A line-of-sight cross-section is presented in the VIA Supplemental Information showing that only the blade tip of the highest turbine may be visible if one assumes that the trees on the opposite shore are at least 60 feet high (TJD&A 2011, page 15).

Potential Effect on Public Use: "The Project should have a relatively minor impact on the public's continued use and enjoyment" (TJD&A 2010, page 24). However there is no documentation that this would be true.

Project Impact: Only the tips of up to turbines may be visible.

Conclusions: "The Project should not significantly compromise views from Halfmoon Pond" (TJD&A 2010, page 24). It is unclear how this conclusion is reached.

2.7.9 Perkins Lot.

Context: It is difficult to see how this description would be useful in evaluating scenic impact. There is no consideration of scenic qualities, and while it is indicated there are photographs, no explanation or interpretation is given. It is indicated that the public does not have the right of legal access, though this may better be described under Significance.

Significance: It is indicated without documentation that the Perkins Lot was designated as a significant state scenic resource after testimony about the Bald Mountain hiking trail and views from the summit. However, most of the trail is on private land without a public right of access, and the Bald Mountain summit is not located within the Perkins Lot property. No indication is given how to interpret this information.

Public Uses: This section gives further detailed description of the Bald Mountain trail, which would more properly be located under Context. No specific recreational use is identified, though one assumes it is hiking. The "extent, nature and duration of potentially affected public uses of the scenic resource" is not described.

Viewer Expectations: It is assumed that hikers will have "an expectation of high scenic quality," though no supporting documentation is given.

Project Impact: The visual description is useful—number of turbines, distance, their horizontal angle of view, and that they will not appear higher than Saddleback Mountain. Photosimulation 4 is cited, but it is not referenced in the discussion.

Potential Effect on Public Use: No documented information is presented. This section is speculation about how the apparent few users would be affected, and whether a few new users would be attracted.

Conclusions: "The Project should not significantly compromise views from the Perkins Lot. The Project should not have an unreasonable adverse effect on its scenic character or the uses related to the scenic character of the scenic viewpoints on the Lot" (TJD&A 2010, page 27). However, it is not clear how this conclusion was reached.

2.7.10 Observations about the Application of the Evaluation Criteria in the VIA

Several observations can be drawn from this review of how the Evaluation Criteria have been applied in this VIA.

- The Evaluation Criteria as presented in the Wind Energy Act require refinement to be unambiguously understood, accurately applied and usefully interpreted.[27]

[27] 35-A MRSA, § 3452, sub-§3

- This VIA does a good job of describing the number and extent of turbines visible and their distance from the significant scenic resource (Criterion F).
- Much more effective use can be made of the photosimulations when addressing the Evaluation Criteria. It is important that a "worst case" view from each state or nationally significant scenic resource be evaluated, and a simulation prepared if there is the potential view of the generating facilities.
- The information about public use (Criterion E), viewer expectations (Criterion C), and potential effect on public use (Criterion E), is generally not based on documented data, even at state and nationally significant scenic resources. This is primarily because the data do not already exist. Patriot Renewables is to be commended for conducting an original intercept survey of hikers on Mount Blue in Mount Blue State Park.
- The Evaluation Criteria concerning significance (Criterion A) and existing character (Criterion B) need to better focus on scenic quality so that they will be useful in making a determination about scenic impact.

3. Field Review and Additional Analysis

The first section of this review describes how the standards and criteria established by the Wind Energy Act fit with a normal approach to visual impact assessment process. The second section of this review considers the adequacy with which the *Visual Impact Assessment Saddleback Ridge Wind Project* follows this process. This, the third section, reports the findings of the fieldwork and additional analyses conducted as part of this review.

3.1 Determination of the Area of Potential Effects and State and Nationally Significant Scenic Resources

Area of Potential Effects (APE). The VIA must evaluate potential scenic impacts to all state or nationally significant scenic resources within 3 miles of generating facilities (i.e., turbines and transmission line). The permitting authority may require within 30 days of its acceptance of the application as complete for processing the evaluation of potential scenic impacts to state or nationally significant scenic resources within 8 miles of generating facilities. It may also require within the 30 day period the evaluation of scenic impacts from associated facilities (e.g., buildings, access roads, and substations).

In practice, VIAs have been using an APE of 8 miles from the wind turbines. Typically, the transmission line has not explicitly effected determination of the APE because it joined an existing transmission line well within this APE. However, this is not the case for Saddleback Ridge Wind Project. As shown in Map 1 Transmission Line Area of Potential Effects, the 3-mile APE for the transmission line extends well beyond the 8-mile APE for the wind turbines. As it turns out, there are no significant scenic resources within this area, therefore visual impacts from the transmission line and not further considered in this review. **However there could have been, and it is important that future grid-scale wind energy VIAs explicitly investigate the APE required for the transmission line as well as the wind turbines.**

State and Nationally Significant Scenic Resources. The VIA correctly identifies the potential scenic resources of state and national significances under the Wind Energy Act. These include:

- Halfmoon Pond by virtue of being identified as a significant scenic resource in *Maine's Finest Lakes* (Drew, et al. 1989).
- Mount Blue State Park by virtue of being a State Park.
- Perkins Lot by virtue of being among the Public Reserved Lands designated by the Department of Conservation (DOC 2010).

In addition, there are seven sites listed on the National Register of Historic Preservation. The Wind Energy Act states that "'scenic resources of state or national significance' means an area or place owned by the public or to which the public has a legal right of access."[28] The ownership and current use of these seven sites are listed in Table 3. Three of these are publicly owned—Goodspeed Memorial Library, Jay-Niles Memorial Library and the Weld Town Hall. The remaining four are privately owned; one is clearly a private residence without a public legal right of access. That leaves the quandary of how to evaluate the remaining three sites, which are

[28] 35-A MRSA, § 3451, § 9

private, but serve a community social function. A similar quandary would exist if any of these sites were churches. **Guidance needs to be obtained from the State Attorney General's Office about how to interpret this requirement of the Wind Energy Act.**

For the purposes of this review, only the John G. Coburn House will not be considered a significant scenic resource.

Table 3. Sites on the National Register of Historic Places in the Study Area

Sites Listed in the NRHP	Ownership†	Current Use†
John G. Coburn House	Private	Residence, Agriculture
Goodspeed Memorial Library	Local government	Library
Bass Boarding House	Private	Museum
North Jay Grange Store	Private	Meeting hall, Commercial
Jay-Niles Memorial Library	Local government	Library
Temple Intervale School	Private	Museum
Weld Town Hall	Local government	Town hall, meeting hall

† Site ownership and current use were obtained from http://www.nationalregisterofhistoricplaces.com/ME/Franklin/state.html and copies of the nomination forms.

3.2 Visibility Analysis

Visibility analysis determines whether a line-of-sight exists between two specified points. Typically a geographic information system (GIS) is used to map the viewshed from which specified targets are visible. In principle this is an objective exercise in geometry highly suited to a computer application. In practice however, since the data are only approximations of the actual condition and may include errors, the resulting viewshed maps are best considered a preliminary analysis of potential visibility under simplified conditions. The maps are useful for providing a preliminary investigation of the overall potential visual impact, and particularly for comparing alternatives. If potential visual impacts appear to exist for significant scenic resources, they need to be confirmed through field investigation and other visualization techniques.

For this review, visibility analyses were performed using ArcGIS 10 software (ESRI 2010). The digital data were provided by Terrence J. DeWan and Associates (2010) and appear to be the same as those available from the Maine Office of GIS. The analysis procedure is relatively standardized, though analysts can reasonably make different assumptions about the analysis variables, and the results can be presented in a variety of ways.

The elevation data used for this review are sampled on a 10-by-10 meter grid, and have ≤ 4 meter absolute vertical height accuracy, the same as used in the VIA. In addition, the VIA conducted a vegetated viewshed analysis that assigned vegetation heights to forested wetlands and recently harvested areas, as previously described in section 2.3 Visibility Analysis. For this review, the forested visibility analysis assumes a dense 40-foot high visual screen where forested land cover occurs—that is deciduous, evergreen and mixed forest, but not in areas recently harvested or

wetlands. Forty feet is commonly used by professionals in the northeast as a conservative, but reasonable forest canopy height in a visibility analysis.

Visibility of the Saddleback Ridge Wind Project. The six viewshed maps prepared to investigate several issues associated with the Saddleback Ridge Wind Project are included in Appendix 1. The first two maps investigate the greatest possible area from which a part of any turbine could possibly be visible. In this case it is an upraised blade tip 443 feet (135 meters) above the ground. Three different constraints on visibility are considered: (1) just bare topography, (2) topography with forest cover, and (3) topography with forest cover, harvested forest, and forested wetlands as used by TJD&A in their VIA. The resulting viewshed maps are:

Map 2: Saddleback Ridge Topographic Viewshed for Blade Tip

Map 3: Saddleback Ridge Forested Viewshed for Blade Tip

Map 4: Saddleback Ridge Forested (TJD&A) Viewshed for Blade Tip

While there may be a line-of-sight to just an upraised blade tip, it may not be noticeable and would certainly not be visually dominant. Therefore another analysis investigates the area from which a significant portion of a turbine could possibly be visible. In this case it is visibility of the turbine hub, located 278 feet (85 meters) above the ground. The same three constraints on visibility resulted in the following viewshed maps:

Map 5: Saddleback Ridge Topographic Viewshed for Turbine Hub

Map 6: Saddleback Ridge Forested Viewshed for Turbine Hub

Map 7: Saddleback Ridge Forested (TJD&A) Viewshed for Turbine Hub

Visual inspection indicates that this review's topographic viewshed of blade tips shows the same area as TJD&A's (2010) Viewshed Map A, and that this review's forested viewshed map using TJD&A's vegetation cover and height assumptions is the same as TJD&A's (2010) Viewshed Map B. Table 4 reports the size of the area from which the project may be visible given the assumptions used for each of the six visibility maps created for this review. Forty-seven percent of the study area is screened from a potential view of an upright blade tip by landform topography. It is very unlikely that anyone at ground-level looking toward the Saddleback Ridge will see any portion of a wind turbine from this area. Maine Historic Preservation Commission agreed that any potential historic resources within this area need not be surveyed for indirect affects from the proposed project (Tetra Tech 2010, page 8-2). **This guidance to only evaluate state or nationally significant scenic resources with potential views of a turbine tip as indicated by the topographic visibility analysis is reasonable and should be adopted by others.**

It is frequently argued that accounting for the screening effect of forest cover provides a more realistic assessment of a wind project's visibility. Approximately 13 percent of the study area has a potential to view of a turbine tip if one assumes the a screening effect from assigning a height of 40 feet to the deciduous, evergreen and mixed forest land cover types. TJD&A also assign screening effects to harvested areas that have significantly less canopy closure, as described above in section 2.3 Visibility Analysis. The visibility analysis using these screening assumptions from the VIA indicate that only 3 percent of the study area has potential views of

blade tips. This difference demonstrates that assumptions about screening—what land cover types to include and what heights to assign to them—can significantly affect the results of a visibility analysis. This is the reason that we caution about relying heavily on the results of visibility analysis using forest screening to make decisions about visual impacts. **Potentially "worst case" viewpoints at all state or nationally significant scenic resource need to be investigated in the field, and should also be investigated though geometrically accurate visual simulations.**

Table 4. Area of Saddleback Ridge Wind Turbine Visibility*

Visibility Analysis	Potentially Visible Area (square miles)	Percent Study Area†
Turbine Tip Visible		
Topographic	120.2	52.7
Forested	29.3	12.8
VIA	7.2	3.1
Turbine Hub Visible		
Topographic	111.8	49.0
Forested	27.3	12.0
VIA	6.6	2.9

* Visibility is based on an ArcGIS analysis before field verification.
† The area within 8 miles of a turbine is 228 square miles.

Table 5 summarizes the maximum number of Saddleback Ridge blade tips and turbine hubs that may possibly be visible from the significant scenic resources within 8 miles of the turbines using the following visibility constraints: topographic, forested and forested with harvested areas.

There are four historic sites that will be screened by topography from the Saddleback Ridge Wind Project: Goodspeed Memorial Library, Bass Boarding House, Temple Intervale School, and Weld Town Hall. In addition, John G. Coburn House does not qualify as a significant scenic resource under the Wind Energy Act because it is a private residence without public right of access.

Table 5. Maximum Number of Saddleback Ridge Wind Turbines Visible

Significant Scenic Resource	Nearest Turbine (miles)	Blade Tip Visible			Turbine Hub Visible		
		Topographic	Forested	VIA	Topographic	Forested	VIA
Historic Sites							
John G. Coburn House	5.0	12	12	12	12	12	12
Goodspeed Memorial Library †	7.0	0	0	0	0	0	0
Bass Boarding House †	7.0	0	0	0	0	0	0
North Jay Grange Store	7.9	12	12	12	12	12	10
Jay-Niles Memorial Library	7.9	12	12	12	12	12	12
Temple Intervale School †	7.8	0	0	0	0	0	0
Weld Town Hall †	5.8	0	0	0	0	0	0
State Parks							
Mount Blue State Park—Mount Blue summit	7.4	5*	0	0	5*	0	0
Mount Blue State Park—Farmhouse Turnout	6.9	12	12	12	12	12	12
Mount Blue State Park—Webb Lake Beach	5.8	12	12	12	12	12	12
Great Ponds							
Halfmoon Pond	5.4	12	11	11	12	8	8
Maine Public Reserve Land							
Perkins Lot—Bald Mountain near summit	1.7	12	0	0	10	0	0

† Topography screens all visibility of the project from these sites.

* Additional seven turbines will be visible beyond the 8-mile threshold of potential significant visual impact.

3.2 Field Review

I was able to visit most of the significant scenic resources on December 2 and 3, 2010. The weather both days was cold and overcast, but without precipitation; visibility was adequate for the task or reviewing the VIA. The primary purpose of this field work was to check the landscape character and viewing condition from significant scenic resources with the greatest apparent visual impact (e.g., Farmhouse Turnout) and where photosimulations were not prepared, but there appeared to be a potential for turbine views (e.g., Jay-Niles Memorial Library).

Historic Sites

3.2.1 John G. Coburn House. It is privately owned and does not have public legal right of access. Therefore it is not a state or nationally significant scenic resource under the Wind Energy Act and will not be considered further.[29]

3.2.2 Goodspeed Memorial Library. Topography will screen views of the project, and the field visit also indicated that surrounding urban structures and vegetation also screen views toward the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

3.2.3 Bass Boarding House. Topography will screen views of the project, and the field visit also indicated that surrounding urban structures and vegetation also screen views toward the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

3.2.4 North Jay Grange Store. The North Jay Grange Store is private property, and while the building may still be used for social purposes, the "Grange Store" seems to be closed and the signs on the porch roof removed. There are no indications of public access or use of the grounds behind the building where views may be possible. The building will block views of the project from the normally accepted "public space" (e.g., the street in front of the building, the porch, and the entry), as shown in Figure 2. No visual clues (e.g., a worn path to picnic tables and fire pit) were observed to suggest that there was public use of the area behind the building where there may be views. The standard procedure when conducting a VIA is to evaluate only outside views; while the project may be visible from inside the structure these views are not normally evaluated.

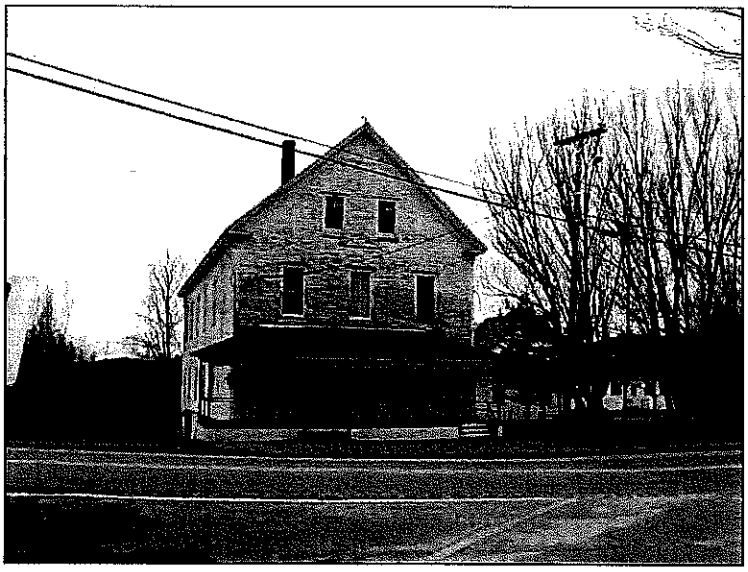

Figure 2. Even in this view from across the intersection, it appears that the North Jay Grange will block views of the turbines.

[29] 35-A MRSA, § 3451, § 9

3.2.5 Jay-Niles Memorial Library. Topography does not screen the turbines from this significant scenic resource, though the field visit indicated that that coniferous vegetation will partially screen them. There will be views of the project from the entry and parking lot, as shown in Figure 3. A photo simulation was prepared as part of the VIA Supplemental Information (TJD&A 2011, page 14).

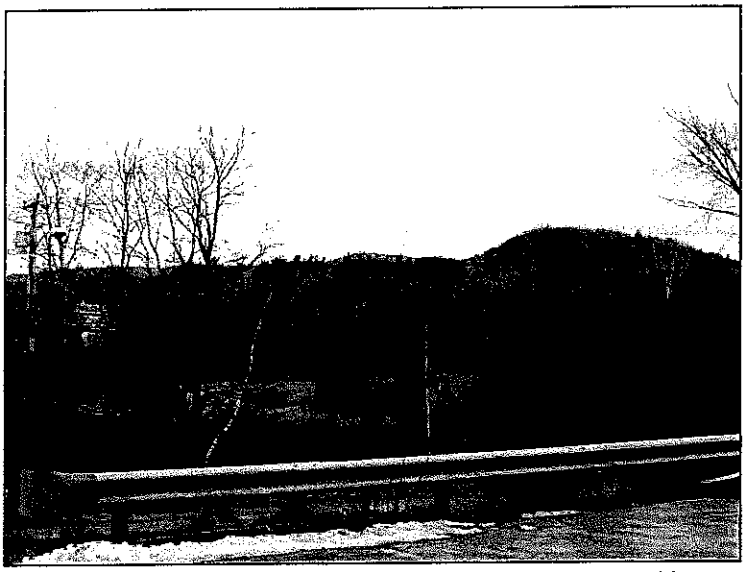

Figure 3. The tops of turbines will be visible from the parking lot of the Jay-Niles Memorial Library..

3.2.6 Temple Intervale School. Topography will screen views of the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

3.2.7 Weld Town Hall. Topography will screen views of the project, which was verified in the field. Without visibility there can be no visual impact. Therefore it will not be considered further.

State Parks

3.2.8 Mount Blue State Park—Mount Blue summit. The hike to the summit of Mount Blue was on a cold overcast day, but there was no precipitation. The hike is approximately 1.6 miles and 1,800 vertical feet. The second half of the trail was over rock which was covered with ice and snow. We went very carefully! Walking up the trail, we did not notice any views until we were very near the top. As one neared the summit, a view appears to have been recently "improved" by cutting 2-6 inch caliper conifers. The top of Mount Blue had been cleared for a fire tower. The tower is now abandoned and there are lots of conifer saplings growing in the opening. The panorama from here is also wonderful and places Saddleback in the center. Small trees also have been cut here to improve the view. This is the viewpoint used for Photosimulation 1.

3.2.9 Mount Blue State Park—Farmhouse Turnout. This overlook is in front of the Mount Blue State Park headquarters. It provides a wonderful panoramic view over Webb Lake and of rows of mountains, including Saddleback Ridge site. The viewer naturally looks out across the lake toward Spruce Mountain—the turbines are to the left of the lake. This is the viewpoint used for Photosimulation 2.

3.2.10 Mount Blue State Park—Webb Lake Beach. There is a large campground located on the opposite side of Webb Lake from Mount Blue and the Farmhouse Turnout. The campground closed October 11 and the gate across the road is closed for the season, but people are welcome to walk into the park. There is a large parking lot and short trail to a beach and dozens of picnic tables, all of which appear to be very well maintained. The only possibility for a view toward Saddleback Mountain is from the beach area is on the rocks at the far northern end. Saddleback

Mountain is just visible to the left of the trees at the south end of the beach—but Saddleback Ridge will be screened. There is a trail along the shore north of the beach through picnic tables and beyond, and there are one or two locations on the shore where some project turbines will be visible. The shore trail leading south from the beach also goes through an extensive picnic area to the boat launch. There will be no views from the boat launch to the project. If one continues along this south trail there may be clear views of Saddleback Ridge, but they may be outside the park boundary. Once someone is out on the water, they will have a clear view of the project, as shown in Photosimulation 3. However, Webb Lake is not a state or nationally significant scenic resource.

Great Ponds

3.2.11 Halfmoon Pond. *Maine's Finest Lakes Study* identifies Halfmoon Pond as an outstanding scenic resource (Parkin, et al. 1989). The road back to Halfmoon Pond is very rough with cobbles and ruts. The road was gated and signed that it is closed between December 1 and June 31. However it was open, apparently to provide access to ATV riders. There are many signs for the various ATV and snowmobile trails, but no signs for Halfmoon Pond. There appears to be a lot of logging activity in this area. We found what we think was the final quarter mile road to Halfmoon Pond (according to our GPS), but one needed to either cross a deteriorated logging bridge or drive through a stream. Since it was getting dark, the road was uncertain and we were concerned that the gate might be locked, we decided not to continue.

Maine Public Reserve Land

3.2.12 Perkins Lot—Bald Mountain near summit. Perkins Lot is designated a scenic resource of state significance; however the public does not have a legal right of access. This property is surrounded by private land. In the past access has been denied, however "per recent verbal conversations, the current landowner allows hiking on the trail, but the current landowner specifically has not authorized trail maintenance or new trail promotion materials" (Stearns 2010). Stearns also notes that "The statutes guiding scenic designations on public reserve land do not require a demonstration of public access. … BPL believes that the lack of public access to the Perkins lot is informative, but not determinative" (Stearns 2010).

On December 3, 2010 we went to the trailhead for the Bald Mountain trail—there is no formal parking, just enough room for a couple of cars to pull of the side of Route 156. The trail appeared to be in poor condition, and there was no clear way to cross the stream other than wading through the rushing water on a very cold day. We decided not to attempt the crossing.

Photosimulation 4 shows a view of the project from the Perkins Lot. Stearns (2010) writes "Noting the visual simulations and other material supplied by the applicant, and noting historic abutter sensitivities, BPL concludes that the visual impact to the Perkins Lot is not a reason to reject the pending application."

3.3 Visual Simulations

TJD&A constructed their photosimulations using WindPRO software, and checked them using Google Earth. The simulations appeared reasonable, but without access to WindPRO software, it is not possible to replicate their work. Therefore this review employs ArcScene software to

provide an independent check of the reasonableness of the simulations and to explore the possibility of visibility from areas where photosimulations were not made. While not a photo-realistic image, ArcScene visualizations are accurate perspectives created with the same horizontal angle of view as the VIA photosimulations. These visualizations are located in Appendix 2: ArcScene Visualizations. They are created with the same GIS data used for the visibility analysis. In general the visualizations exaggerate the visual impact of the turbines because the tree heights are 40 feet or less[30] and the turbines are a very dark color. While setting tree height to 40 feet is normal for visibility analysis purposes, it is lower than the normal forest canopy in this region. During fieldwork, tree heights typically measure over 60 feet in the Saddleback Ridge study area, and in the Spruce Mountain Wind study area to the southwest.

3.3.1 Mount Blue State Park—Mount Blue Summit. Visualization 1 is to be compared to Photosimulation 1A from the summit of Mount Blue near the abandoned fire tower. The scope and scale of the project is essentially the same in both representations.

Some limitations of ArcScene visualizations are illustrated in Visualization 1. The turbines in the visualizations are always dark, though the actual turbines will be a light gray and will typically appear this way in the landscape. The mountains beyond the 8-mile study area are not represented in the visualization, though they are in the photosimulation. This is important, because they provide a background that reduces the perceived contrast and visual impact of the turbines. Another limitation of visualization is that they rely on GIS data that is too coarse to portray the finer resolution perceived in the foreground. The dark green wash that covers the lower right third of the page is foreground vegetation, which the photograph used for the simulation clearly shows does not obscure the view. However, a knowledgeable viewer can acknowledge these limitation, and still conclude that Photosimulation 1A appears to be an accurate representation.

3.3.2 Mount Blue State Park—Center Hill "Ledges". No simulation was prepared from this viewpoint for the VIA, and it was not investigated during the fieldwork for this review. However, in response to comments by Alan Stearns, TJD&A (2011) did evaluate the scenic impact to this site. This simulation is essentially the same as the simulation prepared for the Friends of Maine's Mountains report (Lawrence 2010).

3.3.3 Mount Blue State Park—Farmhouse Turnout. Visualization 2 is to be compared to Photosimulation 2A from the Farmhouse Turnout (aka "Overlook," but misnamed Center Hill Overlook in the VIA). The scope and scale of the project is essentially the same in both representations. While there are mountains on the right side of the photograph that are outside of the study area and not represented in the visualization, in this case the turbines will rise above the horizon and be back grounded by the sky. The dark turbines against a white sky shown in the visualization present the highest contrast situation. The turbines will normally appear gray, similar to what is shown in the photosimulation.

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[30] TJD&A's vegetation heights were used (2010, page 3): Deciduous Forest – 40', Mixed Forest – 40', Wetland Forest – 30', Light Partial Cut – 40', Evergreen Forest – 40', Heavy Partial Cut – 40', and Regenerating Forest – 20'.

3.3.4 Mount Blue State Park—Shoreline North of the "Beach." No simulation was prepared from this viewpoint for the VIA, but one is presented and evaluated in the VIA Supplemental Information (TJD&A 2011, page 8). This simulation is essentially the same as the simulation prepared for the Friends of Maine's Mountains report (Lawrence 2010).

3.3.5 Mount Blue State Park—Hedgehod Hill. No simulation was prepared from this area for the VIA, but one is presented in the VIA Supplemental Information (TJD&A 2011, page 11). Because this area was not investigated during the fieldwork for this review, it is not possible to verify that it is a "worst case" view. However, the information effectively demonstrates that the turbines will be difficult of impossible to distinguish from this viewpoint.

3.3.6 Perkins Lot. Visualization 5 is to be compared to Photosimulation 4A from the Perkins Lot, near the summit of Bald Mountain. The scope and scale of the project is essentially the same in both representations. The primary differences are attributable to the dark color of the turbines and the 40-foot high forest canopy used for the visualization. Photosimulation 5A is probably a more accurate representation of these aspects. Though impossible to represent with a static simulation, at this distance the rotation of the turbine blades is clearly observable and may draw the attention of viewers.

3.3.7 Halfmoon Pond. Visualization 6a and 6b are to be compared to Photosimulation 5A from the shore on Halfmoon Pond. The view from Halfmoon Pond illustrates the important role of forest vegetation as a visual screen. Visualization 6a assumes a forest canopy of 40 feet or less, while Visualization 6b assumes a forest canopy of 60 feet or less. This is the difference between clearly seeing two and possibly four or five turbines, or seeing just a portion of one turbine. Based on measurements of the forest canopy in other places, Visualization 6b is probably more realistic, though this site was not visited during the fieldwork and the heights of trees along the opposite shore were not measured.

Halfmoon Pond provides an example of the difficulties of preparing visual simulations. From this viewpoint, the trees on the opposite shore are still within the foreground. The only distant landscape element that is visible through these trees is a small portion of ridgeline, believed to be part of Saddleback Mountain. The difficulty is that it takes at least two well defined common points, and preferably three or more to properly register two images. Figure 4 illustrates how TJD&A uses Google Earth to verify the location of the turbines within the photosimulation.

Figure 4 contains three components, the photograph used in Photosimulation 5A, the draft drawing of the turbines from WindPRO, and the view as represented in Google Earth. The ridgeline from the WindPRO drawing corresponds well to the horizon line in Google Earth, indicating that they are properly registered. The small portion of Saddleback Mountain visible in the photograph is located match the slope near the peak, though perhaps the WindPRO ridgeline is below the bit of ridgeline in the photo. In addition, the waterline of the photo seems higher than it is in Google Earth. This could be because of real differences in water level, or slight differences in the viewpoints used for the photo and Google Earth, or the photo may be improperly scaled. If the photo were a bit larger, bringing the two waterlines together and retaining the registration Saddleback Mountain's slope, then the tree line would be slightly higher and perhaps screen the turbines slightly more than represented in the Photosimulation 5A.

There are additional ways to check the reasonableness of the photosimulation. For instance, all twelve turbines would occupy approximately 12° in the photo's 37.5° field of view, or approximately a third of the photo's width. This is the approximate relationship visible in Figure 4. A line-of-sight cross-section drawn from the viewpoint to the highest turbine would also help understand the potential for the project to be visible. It may be important to use vertical exaggeration or have a detailed blowup to show vegetation height effects the screening.

In conclusion, Halfmoon Pond is a difficult viewpoint from which to create a simulation with the procedures used in the VIA. However, TJD&A applied the method as skillfully as could be done under the circumstances. In addition they used Google Earth to check these results. The width of the visual field occupied by the twelve turbines in the draft WindPRO drawing is in proportion to the total width of the photograph, indicating that the photosimulation is properly constructed. A line-of-sight cross-section was requested to increase confidence that the simulation accurately portrayed the extent of turbine visibility from this location. It was provided as part of the VIA Supplemental Information (TJD&A 2011, page 15). Overall, Photosimulation 5a appears to be a reasonable representation.

3.3.8 North Jay Grange Store. There is no directly comparable photosimulation to Visualization 7, which is from the area near the North Jay Grange. If one excludes the foreground context, there is clearly an opportunity to see the turbines. However, the photograph in Figure 2 on page 27 shows how the North Jay Grange building will obscure the view toward the project. The background ridgeline in the photograph is to the left (southwest) of the turbines.

3.3.9 Jay-Niles Memorial Library. No photosimulation was prepared for the VIA, but one is presented as part of the VIA Supplemental Information (TJD&A 2011, page 14). Several turbines are visible in the photosimulation above the foreground trees.

Visualization 8 is located at a similar viewpoint near the Jay-Niles Memorial Library and indicates that all the turbines have the potential to be visible. The foreground vegetation that is screening the turbines appears to be classified as either wetland or developed open space in the GIS land cover database, so it is not portrayed in Visualization 8. This particular site illustrates the weakness of over reliance on the ArcScene visualizations and the importance of conducting careful fieldwork.

Figure 4. This image contains three components, the photograph used in Photosimulation 5A, the draft drawing of the turbines from WindPRO, and the view as represented in Google Earth. *Source:* TJD&A.

3.4 Interviews with Visitor on Mount Blue

Visitors to the Mount Blue summit in Mount Blue State Park were interviewed over Labor Day weekend (September 5 and 6, 2010) to determine how seeing the Saddleback Ridge Wind Project might affect their recreation experience. The intercept interviews were conducted by Marketing Decisions of Portland, Maine (Mildner and MacBride 2010).

The Evaluation Criteria mandated by Maine's Wind Energy Act require knowledge about visitors to state or nationally significant scenic resources and the potential impact to their experience that is not normally available. This study provides unique information directly relevant to the Spruce Mountain Wind Project, and indirectly relevant to other proposed wind projects in Maine. The study sample is small, making it marginal for conducting the simple tests reported in this review. However, these are the data that are available. While the value of the analysis presented here is limited by this sample size, it illustrates the type of analysis that might be performed to address the Wind Energy Act's Evaluation Criteria.

The major limitations of the study are that it is limited to one significant scenic resource (Mount Blue), the sample size is small (22 interviews), the sample procedure is not strictly random (all adults were invited to be interview and 20 percent refused for unknown reasons), and it did not sample days throughout the recreation use season (only Sunday and Monday over Labor Day weekend). Nonetheless, similar limitations are commonly encountered in marketing research, and there do not appear to be any obvious biases being introduced into the study.

3.4.1 Public Use. The weather for these two days was very suitable for a day hike. Fourteen groups made the climb to Mount Blue between 10am and 5pm on Sunday and 10am to noon on Monday, and individuals from twelve of these groups were interviewed. A total of 30 adults and 10 children were observed. However a single group accounted for 10 of these people, which may be an anomaly that cannot be tested because of the limited sample. The median group size was 2.0 and a mean of 2.9. If a particularly nice holiday weekend attracted nine groups on a Sunday, then allowing for rainy days it seems likely that the annual use may be close to 3,000 or 4,000 people. About half of the respondents indicated they were interested in a day hike; about a quarter mentioned camping, and about a fifth mentioned scenery. These respondents seemed to be more casual hikers—only 5 hiked more than 10 days a year—and many mentioned that it was a "good little day hike" or "an easier hike." The survey did not attempt to ascertain how long people stayed on Mount Blue.

3.4.2 Validity of Photograph. The viewpoint for the survey is the same that was used for Photosimulation 1. The measurement of scenic impact is reliant on a static photosimulation with a limited horizontal cone of vision. It is therefore important to establish that the scenic value rating of the Actual View is comparable to the rating of the Photograph used in the Photosimulation—this is a question of validity. The mean rating is 5.68 for the Actual View and 5.45 for the Photograph, with 1.0 being the lowest and 7.0 being the highest scenic value. There is no statistically significant difference between these two values, which supports the validity of this study's methods (Paired $t = 1.39, p = .179$).

3.4.3 Apparent Scenic Impact. The difference between the scenic value of the Photosimulation and the Photograph is the apparent Scenic Impact. It can range between negative impact of -6.0

and a positive impact of 6.0, with 0.0 indicating no scenic impact. The mean scenic value rating of the Photograph is 5.45, and of the Photosimulation it is 4.23, therefore the apparent Scenic Impact is -1.23, which is statistically very significant ($t = 3.68, p = .001$).

3.4.4 Effect on Experience and Likelihood to Return. The relevant Evaluation Criterion from the Wind Energy Act is less the apparent Scenic Impact, *per se*, and more about its Effect on the Experience of users at significant scenic resources. Another possible indicator of how users of Mount Blue might be affected by the project is their Likelihood to Return if the project were built. The study report provides the simple mean values for ratings of Effect on Enjoyment (mean = 3.95) and Likelihood to Return (mean = 4.27). Neither of these ratings differ significantly from a rating of "no change" (respectively $t = -0.15, p = .880$ and $t = 0.78, p = .444$).

A useful additional analysis is to investigate the relationship of apparent Scenic Impact with Effect on the Experience and Likelihood to Return. Linear regression is one approach to such an analysis. There is a modest, but statistically significant relationship between apparent Scenic Impact and the Effect on the Experience (adjusted $R^2 = -36.3\%$, $t = 3.6, p = .002$). There is a similar relationship between apparent Scenic Impact and the Likelihood to Return (adjusted $R^2 = 30.7\%$, $t = 3.21, p = .004$). In other words, those who see a very negative Scenic Impact believe that constructing the project would Effect their Enjoyment and that they would be less Likely to Return, those who see a more positive scenic impact are more Likely to Return and to have the project positively Effect their Experience. Support for wind energy in Maine is moderately correlated with Scenic Impact (Pearson $r = .65$), Effect on Experience (Pearson $r = .48$) and Likely to Return (Pearson $r = .49$).

The comments about how respondents anticipated the project would Effect their Enjoyment of Mount Blue reflect the above numbers. Several people (about 7) indicated that "it's not nice to see human influence on the environment." Several others (about 6) indicated that the turbines would be better for the environment in the long term: "knowing it's helping the environment, rather than detracting from it—sustaining beauty here instead of other sources of energy that negatively affect the environment." A similar number (about 5) thought the view was "still beautiful." One respondent found them "majestic and…beautiful."

4. Evaluation of Scenic Impacts

4.1 Evaluation Criteria

Ten places were identified as potential state or nationally significant scenic resources under the Wind Energy Act criteria. This section evaluates the scenic impact to these resources based on my understanding of the Wind Energy Act's scenic impact Evaluation Criteria. [31]

A **Significance of resource**: Consider the role of scenic quality in designation, and the level of significance relative to similar designations. Indicators may be obtained from the designation reports or forms, supplemented by descriptions from widely used guide books.

B **Character of surrounding area**: Consider contrasts with the existing landscape and the presence of other contrasting elements. User surveys may provide a direct measure of the existing scenic quality. This may also be based on a descriptive landscape characterization, typically prepared by a landscape professional.

C **Typical viewer expectation**: Consider the resource's scenic reputation, and the centrality of scenic quality in its designation. User surveys may provide an indicator of expectations. In the absence of direct empirical data, distance traveled or descriptions from widely used guide books may provide alternative indicators.

D **Development's purpose and context**: This criterion incorporates the Wind Energy Act's goal of achieving significant wind energy development into consideration of scenic impacts. Consider site quality—wind suitability, proximity to transmission line, and potential power generation if all potential turbine sites in the area are used. Low evaluation means that if all sites in the area are developed, it makes a major contribution to Wind Energy Act's goals. High evaluation means the area makes a minor contribution when all potential sites are developed.

E.1 **Extent, nature & duration of uses**: Consider the number of users, role of scenic quality in use of the resource, and typical length of stay. User surveys provide the most direct indicators, but trail logs or traffic counters may also be useful. Potential accessibility may be an indicator in the absence of empirical data.

E.2 **Effect on continued use and enjoyment**: If the project were built, what is the likelihood of users returning, and the impact on their enjoyment of the scenic resource? User surveys incorporation accurate photographic visual simulations may provide indicators.

F **Scope and scale of project views**: Consider the relative magnitude of project elements, and the proportion of total angle of view occupied by project. Accurate photographic simulations and visibility analyses may provide indicators.

The levels of severity for the Evaluation Criteria are as follows:

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[31] 35-A MRSA, § 3452, sub-§3

- **None.** The Evaluation Criterion makes no contribution to scenic impact. For some criteria a rating of None means that there is No Adverse Impact (e.g., there are no people present—Criterion E, or the project is not visible—Criterion F).

- **Low**. The severity of the contribution is low. While the scenic impact may be Adverse, it appears to be within the acceptable range for any type of development (e.g., only one or two turbines will be partially visible at a distance of nearly 8 miles—Criterion F).

- **Medium**. The severity of the contribution is medium, which is Adverse but typical of wind energy development, and within the range of impacts that the Wind Energy Act anticipates (e.g., other towers or large scale structures are present that contrast highly with the surrounding landscape).

- **High**. The severity of the contribution is high from this criterion, which in association with other criteria may make the overall scenic impact Unreasonably Adverse (e.g., a possible scenario suggesting an Unreasonable Adverse impact might be that the scenic resource is a national icon—Criterion A is High, though there are only modest numbers of viewers—Criteria E.1 is Low—to a person their enjoyment will seriously decline—Criteria E.2 is High).

The Evaluation Criteria for each of the state or nationally significant scenic resources are discussed below, and summarizes in Table 6 the Evaluation Criteria ratings for the Saddleback Ridge Wind Project.

4.2 John G. Coburn House
Public access. This historic site is privately owned and does not have public legal right of access. Therefore it is not a state or nationally significant scenic resource under the Wind Energy Act and will not be considered further.[32]

Overall scenic impact. None, since there is no public access.

4.3 Goodspeed Memorial Library
Public access. This is a publicly owned property.

Criterion F: Scope and scale of project views. Topography will screen views of the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

Overall scenic impact. None, since there is no possible project visibility.

4.4 Bass Boarding House.
Public access. This is a privately owned property. There is no indication that the public has a legal right access.

[32] 35-A MRSA, § 3451, § 9

Criterion F: Scope and scale of project views. Topography will screen views of the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

Overall scenic impact. None, since there is no possible project visibility. It is also uncertain whether the public has a legal right of access.

4.5 North Jay Grange Store

Public access. The North Jay Grange Store is private property, and while the building may still be used for social purposes, the "Grange Store" seems to be closed and the signs on the porch roof removed. There are no indications of public access or use of the grounds behind the building where views may be possible.

Criterion A: Significance of resource. This historic site was nominated in 1974. The State Historic Preservation Officer Certification is not signed and does not designate a level of significance. Scenic quality is not mentioned in the nomination form (MHPC 1974).

Criterion B: Character of surrounding area. Typical small Maine village with modest houses and public buildings. The Grange building is in need of paint, and appears to be becoming an eyesore.

Criterion C: Typical viewer expectation. If the building is used primarily for Grange meetings, it is unlikely they have any scenic expectations.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The Grange still may hold meetings in the hall, however the extent of current use is unknown. There is no obvious reason to believe that scenic quality plays a role in any potential uses.

Criterion E.2: Effect on continued use and enjoyment. There is no obvious reason to believe that a scenic change due to turbines 7.9 miles away would have a meaningful effect on any uses of the building.

Criterion F: Scope and scale of project views. The viewshed analyses indicate the potential to view all 12 turbines under all screening assumptions. The building will block views of the project from the normally accepted "public space" (e.g., the street in front of the building, the porch, and the entry). No visual clues (e.g., a worn path to picnic tables and fire pit) were observed to suggest that there was public use of the area behind the building where there may be views. The standard procedure when conducting a VIA is to evaluate only outside views; while the project may be visible from inside the structure these views are not normally evaluated.

Overall scenic impact. It is unclear whether there is public access to this historic property. The building blocks views toward the project from the street and main entrance. It appears that there will be no scenic impacts.

4.6 Jay-Niles Memorial Library
Public access. This is a publicly owned property.

Criterion A: Significance of resource. This historic site was nominated in 1987. The State Historic Preservation Officer Certification is not signed and does not designate a level of significance. Scenic quality is not mentioned in the nomination form (MHPC 1987).

Criterion B: Character of surrounding area. This is a typical small Maine village with modest houses and public buildings. The library has a commanding view of the village over Sevenmile Stream, with the top ridges of surrounding hills being visible.

Criterion C: Typical viewer expectation. People at locations where they may see the project will be in the library parking lot and entering or exiting the library.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. One assumes that the uses are typical of a community library: checking out and returning books, doing school work, or attending library programs. There is no information about how many users the library has or how long they stay.

Criterion E.2: Effect on continued use and enjoyment. These primary uses of the site are not related to landscape scenic quality, and occur inside the library, where there is less visual access toward the project. As a result, visual access to the project is likely to have little to no potential effect to these uses.

Criterion F: Scope and scale of project views. Topography does not screen the turbines from this significant scenic resource, though it is possible that coniferous vegetation will partially screen them. There will be views of turbine blades and possibly hubs from the parking lot and entry, though ten of the turbines will be approximately 7.9 miles away and two will be just over 8.0 miles away. At this distance and in this context, they will have a minor visual presence. An accurately constructed photosimulation is necessary to evaluate the visual affects at this site, and one was provided in the VIA Supplemental Information (TJD&A 2011, page 14).

Overall scenic impact. Blade tips and possibly hubs will be visible from the Jay-Niles Memorial Library, but this "should not compromise views" and "should not have an adverse effect on its scenic character or the uses related to scenic character" (TJD&A 2011, page 18).

4.7 Temple Intervale School
Public access. This historic site was listed in 1985. It is privately owned and may be without public legal right to access.

Criterion F: Scope and scale of project views. Topography will screen views of the project. Without visibility there can be no visual impact. Therefore it will not be considered further. It is also uncertain whether the public has a legal right of access.

Overall scenic impact. None, since there is no possible project visibility.

4.8 Weld Town Hall

Public access. This is a publicly owned property.

Criterion F: Scope and scale of project views. Topography will screen views of the project. Without visibility there can be no visual impact. Therefore it will not be considered further.

Overall scenic impact. None, since there is no possible project visibility.

4.9 Mount Blue State Park

Among the 30 plus state parks, seaside beaches attract the largest number of visitors; however most of the seaside parks do not have camping facilities. Among the parks that do allow camping, Mount Blue ranked fourth in attendance during 2010, making it one of Maine's most popular parks. Table 6 lists the number of day-use and camping visitor for 2010 of all the state parks that have camping facilities.

Table 6. 2010 User-days in Maine State Parks with Camping Facilities

State Park	Day-use	Camping	Total
Sebago Lake	164,498	91,588	256,086
Camden Hills	146,080	27,144	173,224
Bradbury Mountain	124,961	8,836	133,797
Mount Blue	42,466	23,159	65,625
Lamoine	29,852	18,521	48,373
Lake St. George	26,927	12,602	39,529
Lily Bay	10,270	22,142	32,412
Peaks-Kenny	18,866	12,096	30,962
Cobscook Bay	5,670	16,543	22,213
Rangeley Lake	6,659	11,403	18,062
Aroostook	13,388	3,902	17,290
Warren Island	4,456	2,168	6,624

Source: Personal email dated January 5, 2011 from Katherine Eickenberg, Chief of Planning, Maine Bureau of Parks and Lands.

Mount Blue State Park is the second largest in the system (8,219 acres, second to the Allagash Wilderness Waterway at over 24,000 acres). In addition the nearby Tumbledown Mountain Public Reserved Land includes 10,555 acres owned by BPL, including the Perkins Tract. Additional conservation Easements were acquired by the Bureau in 2002-2004 surrounding Tumbledown Mountain and Mount Blue State Park totaling 12,030 acres.

Mount Blue State Park offers a full range of activities during all four seasons. The facilities include 136 campsites, swimming beach, and boat launch. There are 4.3 miles of hiking and 24 miles of multi-use trails. In the winter there are 15 miles of groomed ski trails. In 2009 one winter recreation event drew 600 people.
In a personal email dated January 6, 2011, Gary Best, Assistant Regional Manager, Maine Bureau of Parks and Lands provided the estimates in Table 7 for visitors to specific areas of the park.

Table 7. Estimated 2010 User-days in Areas of Mount Blue SP

17,000*	Farmhouse Turnout and headquarters complex
15,000*	Center Hill Picnic Area
2,000*	Mount Blue trail and summit
43,000*	"Beach" on Webb Lake
2,500*	Shore area north of the "Beach"

Source: Personal email dated January 6, 2011 from Gary Best, Assistant Regional Manager, Maine Bureau of Parks and Lands.
* These are estimates. The numbers reflect individual park visitors experiencing several areas of the park (Best 2011). For instance, a camper is likely to spend most of their time at the beach, but many will also drive to Center Hill or hike up Mt Blue etc.

This short description clearly shows that Mount Blue State Park is among the more important in Maine's State Park system. It is assumed that Mount Blue State Park was established in part because of its scenic quality.

In general, there will be no views of the proposed project from within the park due to both topographic and forest screening. Five locations among those areas with possible views within the park are evaluated: Mount Blue Summit, Center Hill Scenic Trail, Farmhouse Turnout, Webb Lake Beach, and Shoreline north of the Beach.

4.9.1 Mount Blue summit.
Public access. This is a publicly owned property.

Criterion A: Significance of resource. Mount Blue State Park may not be among the top tier of state parks, but its size, visitation, and general scenic quality clearly place it at or near the top of the second tier. Mount Blue is a scenic focal point of the park.

Criterion B: Character of surrounding area. Mount Blue summit is 3, 190 feet above sea-level and is reached by a 1.6 mile hike with a 1,800 foot vertical rise. There are few views out of the forest while making the climb. The summit is also forested with conifers, which limits available viewpoints. The view from the summit is panoramic and typically impressive, as one expects the view to be from a mountain summit. One sees multiple mountain ridges fading into the distance, with little evidence of development.

The survey respondents rated the actual panoramic view from the Mount Blue summit 5.7 on a 7-point scale; the photograph used in the simulation was rated 5.5.

Criterion C: Typical viewer expectation. It is safe to assume that the summit is the destination of most hikers on the summit trail and that they expect to find a panoramic view comparable to other summit views within the state.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. Mount Blue summit trail is estimated to have had 2,000 users during 2010 (Best 2011). Hiking was mentioned as the primary activity by half the surveyed respondents; about a fifth mentioned scenery as a purpose of their visit. My experience was that this was a half-day hike, or hikers could start late in the morning, eat lunch on the summit and be by in camp by mid-afternoon.

Criterion E.2: Effect on continued use and enjoyment. This is the only summit within the park, yet it is attracting only 2,000 hikers out of 65,000 visitors to the park. The average response of the survey respondents for how the project would affect their experience was 3.95, or slightly below a rating of 4 which was defined in the survey as "not change your enjoyment at all." The average response for their likelihood to return was 4.27, or slightly above a rating of 4 which was defined in the survey as "it would not change your enjoyment at all." In both cases, these ratings are not statistically different than a response of "no change."

Criterion F: Scope and scale of project views. All 12 turbines will be visible, though 7 of them will be beyond the 8-mile zone of potentially adverse impacts, as shown in Visualization 1. As a group, they would occupy a horizontal angle of 5° in a panoramic view that is approximately 150° wide. To put this in perspective, the "visual angle of [the] thumb's width is about 2 degrees" (O'Shea 1991). While the 12 turbines may be clearly visible, they will appear to a viewer to be only the width of two and a half thumbs held at arm's length, while the panoramic view is greater than 75 thumbs' widths wide. The visual angle of the five turbines within the zone of potential impact occupy less than a thumb's width. At this distance and angle, the transmission line is unlikely to be visible. A reasonable person could not conclude that a collection of objects of this relative size was visually dominant in the landscape.

Overall scenic impact. Mount Blue State Park is an important scenic resource within the state park system because of its size and visitation. Within the park, the summit offers a highly scenic mountain top panoramic view. All 12 turbines will be visible, with five being between 7.4 and 8.0 miles distant, with the remaining being beyond the distance set by the legislature for possible adverse scenic impacts. On the other hand, the summit receives relatively few visitors. The presence of the turbines will have a negative affect when the hiker looks directly at them, but hikers reported that on average it would not effect their enjoyment or likelihood of returning to the summit. As a result, the overall impact is expected to be slightly Adverse, but not even approaching Unreasonable.

4.9.2 Center Hill "Ledges" [33]

[33] The Center Hill Scenic Trail was not visited during the field work for this report.

The Center Hill "Ledges" were not investigated during the fieldwork for this review. However, both the VIA Supplemental Information (TJD&A 2011) and the Friends of Maine's Mountains (Lawrence 2010) agree about the location of the view from the "Ledges."

Public access. This is a publicly owned property.

Criterion A: Significance of resource. Mount Blue State Park may not be among the top tier of state parks, but its size, visitation, and general scenic quality clearly place it at or near the top of the second tier. The Center Hill Scenic Trail to the "Ledges" is one of the most visited areas of the park. It provides a readily accessible panoramic view toward the surrounding mountain ridges.

Criterion B: Character of surrounding area. The Center Hill Picnic Area includes a parking lot, picnic facilities, an outhouse, and interpretive signs accessed by a short road from Center Hill Road. There is a panoramic view of the mountains to the northwest, away from the project area. The Center Hill Scenic Trail is a short (0.2 miles) nature trail that is well signed and includes improvements such as stairs. It leads to the "Ledges" where the viewer can see a panorama of the surrounding mountain ridges. The view is somewhat similar to the view from the Farmhouse Turnout, except that the viewer has just walked through and is standing in a forested setting.

Criterion C: Typical viewer expectation. This trail is presented as a short pleasant walk with a wonderful panoramic view at its end. This walk might be suitable for many who could not climb Mount Blue. While human presence is clearly apparent along the trail because of constructed elements such as stairs, the user is expected to have an enjoyable "nature" experience walking through woods.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The Center Hill Picnic Area is estimated to have had 15,000 users during 2010 (Best 2011); three-quarters of those or 11,250 are estimated to walk the 0.2 miles to the panoramic view from "Ledges" (Farnham 2011). The walk itself should only take a few minutes. It is assumed they make the walk for a pleasant nature experience, but also because the "Ledges" promises a beautiful panoramic view.

Criterion E.2: Effect on continued use and enjoyment. A substantial number of the park's 65,000 annual visitors walk this scenic trail. It is anticipated that hikers to summit of Mount Blue would be at least as sensitive as walkers to the "Ledges," if not more sensitive. If this is the case, there will be no significant effect to enjoyment or continued use; even though the view's scenic quality will be degraded.

Criterion F: Scope and scale of project views. Only 4 or 5 turbines are within the 8-mile scenic impact zone, and they will occupy approximately a 2° horizontal angle of view. However, the whole project will be visible and occupy approximately an 8° horizontal angle of view. This is a very small percentage of the panorama's horizontal angle of view. This view is a bit further, but occupies a slightly larger portion of the horizontal visual field compared to the view from Mount

Blue's summit. The impact of to the Mount Blue view was statistically significant.. To put this in perspective, the "visual angle of [the] thumb's width is about 2 degrees" (O'Shea 1991). The 4 or 5 turbines within 8 miles of the "Ledges" could be visually screened by holding up your thumb at arm's length. While the 12 turbines may be clearly visible, they will appear to a viewer to be the width of four thumbs held at arm's length, while the panoramic view is several dozen thumbs' widths wide. A reasonable person could not conclude that a collection of objects of this relative size was visually dominant in the landscape.

Overall scenic impact. Mount Blue State Park is an important scenic resource within the state park system because of its size and visitation. Within the park, the overlook offers a highly scenic panoramic view that is accessed by a short walk through the woods and is one of the most visited places in the park. All 12 turbines will be visible, with four or five being between 7.6 and 8.0 miles distant, with the remaining being beyond the distance set by the legislature for possible adverse scenic impacts. However, the sensitivity of visitors to the "Ledges" is anticipated to be somewhat less than hikers to the summit of Mount Blue. These hikers reported that on average it would not effect their enjoyment or likelihood of returning to the summit. Based on these findings, the overall impact is expected to be slightly Adverse, but not even approaching Unreasonable.

4.9.3 Farmhouse Turnout.
Public access. This is a publicly owned property.

Criterion A: Significance of resource. Mount Blue State Park may not be among the top tier of state parks, but its size, visitation, and general scenic quality clearly place it at or near the top of the second tier. The Farmhouse turnout and headquarters compound is one of the most visited areas of the park. It provides a readily accessible panoramic view toward the surrounding mountain ridges.

Criterion B: Character of surrounding area. The Farmhouse Turnout is a parking area surrounded by a stone wall off Center Hill Road. The area has the general character of a hillside farm and field. There are picnic tables here; the headquarters compound is across the road and the site of diverse activities, including multiple-use trails, cross-country ski trails, ice skating, and interpretive programs. While a developed site, the development is behind the viewer as they enjoy the panorama.

Criterion C: Typical viewer expectation. One assumes that the turnout is not typically a destination, bout a found attraction for visitors coming to the headquarters compound to engage in one of the many available activities. In this sense, it is a benefit that is unexpected.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The Farmhouse Turnout and headquarters complex is estimated to have had 17,000 users during 2010 (Best 2011). The turnout is probably not a destination; people park here to engage one of the several activities offered at the

headquarters compound. However, it is easy to imagine that after parking many people would linger in their car or at the far edge of the parking area to enjoy the view before moving on.

Criterion E.2: Effect on continued use and enjoyment. People will continue to park her and enjoy the activities offered at the headquarters complex. It is anticipated that people will still stop to take advantage of the wide open panoramic view.

Criterion F: Scope and scale of project views. All 12 turbines will be visible, with the furthest turbine being located right at the 8-mile threshold of potentially adverse impacts, as shown in Visualization 3. As a group, they would occupy a horizontal angle of 10° along the left end of a wide panoramic view. To put this in perspective, the "visual angle of [the] thumb's width is about 2 degrees" (O'Shea 1991). While the 12 turbines may be clearly visible, they will appear to a viewer to be a bit over the width of five thumbs held at arm's length, while the panoramic view is several dozen thumbs' widths wide. In addition, the transmission line may be visible, as illustrated by the pink line in Visualization 3. Though they will be clearly visible, a reasonable person could not conclude that a collection of objects of this relative size was visually dominant in the landscape.

Overall scenic impact. Mount Blue State Park is an important scenic resource within the state park system because of its size and visitation. Within the park, the turnout offers a highly scenic panoramic view that will be seen by the many people coming to activities held in the headquarters complex. All 12 turbines will be visible from 6.9 to 8.0 miles distant. However, the sensitivity of visitors to the turnout is anticipated to be somewhat less than hikers to the summit of Mount Blue. These hikers reported that on average it would not effect their enjoyment or likelihood of returning to the summit. Based on these findings, the overall impact is expected to be slightly Adverse, but not even approaching Unreasonable.

4.9.5 Webb Lake "Beach"

Public access. This is a publicly owned property.

Criterion A: Significance of resource. Mount Blue SP may not be among the top tier of state parks, but its size, visitation, and general scenic quality clearly place it at or near the top of the second tier. The "Beach" is the most visited areas of the park. It provides a readily accessible panoramic view across the water to a forested shoreline interspersed with cottages and the surrounding mountain ridges.

Criterion B: Character of surrounding area. This is the only beach in Mount Blue State Park. The "Beach" is a sandy crescent enclosed by coniferous interspersed with birch trees. This is a developed facility including a changing area and life guard station. A large parking lot is close by; developed camp and picnic sites are located in the surrounding forest.

Criterion C: Typical viewer expectation. This is an active social beach, not a place for quiet contemplation. The surrounding forest and lake are high scenic quality, but not spectacular. They are in one of the state's larges most visited parks and campgrounds, on a developed beach, so they should not be surprised to see signs of development such as the cottages across the lake.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The "Beach" on Webb Lake is estimated to have had 43,000 users (Best 2011). This is a socially active beach. People will be lounging on the sand and swimming in the cove; one anticipates that there will be sounds of children and perhaps music players.

Criterion E.2: Effect on continued use and enjoyment. The project will not be visible from the "Beach", so there can be no effect to continued use and enjoyment.

Criterion F: Scope and scale of project views. Visitors on the "Beach" will not be able to see the wind turbines because they will be blocked by trees along the "Beach's" southern end. There may be views from the water, but the water is not within the park's boundary.

Overall scenic impact. There is no scenic impact from the "Beach", since there is no project visibility.

4.9.5 Shoreline North of the "Beach"

Public access. This is a publicly owned property.

Criterion A: Significance of resource. Mount Blue SP may not be among the top tier of state parks, but its size, visitation, and general scenic quality clearly place it at or near the top of the second tier. It provides a readily accessible panoramic view under the shoreline trees across the water to a forested shoreline interspersed with cottages and the surrounding mountain ridges.

Criterion B: Character of surrounding area. Developed camp and picnic sites are located in the surrounding forest. The area north of the "Beach" is accessed by a shoreline trail, or simply walking through the woods.

Criterion C: Typical viewer expectation. This shoreline is not a managed destination. It is anticipated that people will come here to see the lake and what may be beyond. One assumes that they expect the scenic quality to be high but not spectacular. They are in one of the state's larges most visited parks and campgrounds, so they should not be surprised to see signs of development such as the cottages across the lake. They may be surprised to see the wind turbines, if they did not see them driving to the park.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The shoreline north of the "Beach" is estimated to have had 2,500 users)Best 2011). This shoreline is not a managed destination. It is anticipated

that people will come here while exploring around their camp site and perhaps to find a quiet spot.

Criterion E.2: Effect on continued use and enjoyment. Vegetation and topography will block views from most areas north of the "Beach." Some viewpoints along the shore may have a view of some turbines if one looks to the right, down the lake. It is anticipated that visitors who are intrigued by the turbines will continue looking for a better viewpoint, while those who dislike the turbines will direct their view across the lake or seek a nearby location where the turbines are screened.

Criterion F: Scope and scale of project views. People walking on the shoreline trail north of the "Beach" may come to places where as many as 12 turbines could be visible at distances of 5.5 to 6.5 miles distant, as shown in Visualization 4. However, they would only be visible if they were walking south, or had stopped to take a closer look. From this angle and distance, the 12 turbines would occupy a horizontal viewing angle of approximately 11°. To put this in perspective, the "visual angle of [the] thumb's width is about 2 degrees" (O'Shea 1991). While the 12 turbines may be clearly visible, they will appear to a viewer to be the width of five and a half thumbs held at arm's length. Though they will be clearly visible, a reasonable person could not conclude that a collection of objects of this relative size was visually dominant in the landscape.

Overall scenic impact. None to Low. There is no project visibility along much of the shore and where there may be visibility under the shoreline trees, there are relatively few users. It would seem that people would come to this area to get away from the more crowded parts of the campground. If they see the turbines, it is an easy matter to simply continue walking under the trees or face another way.

4.10 Halfmoon Pond

Public access. The public has the right of access to Great Ponds.

Criterion A: Significance of resource. The scenic resource of Halfmoon Pond received an Outstanding rating in *Maine's Finest Lakes* study (Parkin et al. 1989).

Criterion B: Character of surrounding area. The area is relatively flat and forested. There appears to be recent substantial logging activity in the area around Halfmoon Pond. There is an extensive network of ATV and snowmobile trails.

Criterion C: Typical viewer expectation. There are no data concerning the scenic quality expectations of people fishing, either generally or specifically on Halfmoon Pond. Given the character of the surrounding area, it is assumed that viewer expectation is low.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. Not plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The Maine Department of Inland Fisheries and Wildlife's (2002) survey for Halfmoon Pond reports they stock it with brook trout to "maintain

this excellent sport fishery." During the fieldwork, we were unable to pass through a stream that crossed the unimproved road to the pond. There is no information about the extent and duration of use, though access is sufficiently poor to limit it use. It is assumed that there are few users.

Criterion E.2: Effect on continued use and enjoyment. There are no direct data about the role of scenic quality to the enjoyment of people fishing on Halfmoon Pond. No data about the contribution of scenic quality to the fishing experience has been collected from other wind energy projects in Maine. In an investigation of the scenic impacts of clear cutting, Palmer (1999) found that people who hunt and fish rated middle-distance views of an unharvested forest hillside lower and the same hillside with clearcut patches higher than people who did not hunt or fish.

Criterion F: Scope and scale of project views. Photosimulation 5A showed the view from the western shore looking across Halfmoon Pond toward Saddleback Ridge. In the center of the photograph, just peaking above the trees is Saddleback Mountain. While the photosimulation indicates "portions of 6± turbines would be visible from this location at a distance of 6.4 to 7.0 mile," it is very difficult to distinguish them among the tree tops.

Overall scenic impact. The impact to will be low to none, since there is little possibility to view the project.

4.11 Perkins Lot—Bald Mountain near summit*Public access.* This is a publicly owned property. While there is no legal public access, this is not required for publicly owned property. The current landowner will allow hikers on the trail, but "specifically has not authorized trail maintenance or new trail promotion materials" (Stearns 2010a).

Criterion A: Significance of resource. Perkins Lot was one of the Public Reserve Lands designated by the Bureau of Parks and Lands as a scenic resource. There is no documentation about why this particular place was of statewide scenic significance. It does not include the Bald Mountain summit.

Perkins Lot is part of the Tumbledown Conservation Project, a "remarkable effort and success in the early 2000s" which resulted in acquisition of both land and easements. The Bureau of Parks and Lands continues "to invite dialog with landowners and funders with likely future projects in mind," among which is legal public access to the Perkins Lot (Stearns 2010a, 2010b).

Criterion B: Character of surrounding area. Bald Mountain is a 2,370 foot peak that is reached by an unmarked hiking trail that begins at Route 156 and proceeds 1.7 miles across private land. The Perkins Lot is further along the trail, past the summit of Bald Mountain. The area is forested. The Maine Mountain Guide does not identify any scenic or notable characteristics (Nation and Cummings 2005, page 204).

Criterion C: Typical viewer expectation. One assumes that expectations for the Bald Mountain summit are similar, though perhaps not as high as that of hikers to the Mount Blue summit. The hikes are of similar length, though Mount Blue is higher. However, the Perkins Lot does not include the Bald Mountain summit, so it is difficult to know what the expectations for it are—

many and perhaps most hikers may not go further than the summit, so they would not even reach the Perkins Lot.

Criterion D: Development's purpose and context. At 33 MW, the Saddleback Ridge Wind Project is of moderate size. No plans are presented to expand this project, though other sites are available higher—and more visible—on Saddleback Mountain.

Criterion E.1: Extent, nature & duration of uses. The primary activity is hiking, and the duration is similar to that for Mount Blue, approximately a half day. Since the Perkins Lot is past the Bald Mountain summit and the private landowner forbids promotion of the trail as a condition of access, it is assumed that there are far fewer users in a year then are found on Mount Blue.

Criterion E.2: Effect on continued use and enjoyment. While the turbines are closer to the viewer, only their tops will be visible and they will occupy a smaller horizontal angle than when seem from Mount Blue. It is anticipated that since the hikers who responded to the survey about visual impacts from Mount Blue did not think that the turbines would significantly effect their enjoyment or continued use, that this would also be true for hikers in the Perkins Lot.

Criterion F: Scope and scale of project views. The VIA states that 8± turbines will be visible at a distance of 1.6 to 3.2 miles. The hubs of some of these turbines will be visible, but this is not an unobstructed view as one finds on the Mount Blue summit, Center Hill "Ledges" or Farmhouse Turnout. At this distance, the turbines will occupy a horizontal viewing angle of less than 4°. To put this in perspective, the "visual angle of [the] thumb's width is about 2 degrees" (O'Shea 1991). While the tops of 8 turbines may be clearly visible, they will appear to a viewer to be the width of two thumbs held at arm's length. Though they will be clearly visible, a reasonable person could not conclude that a collection of objects of this relative size was visually dominant in the landscape.

Overall scenic impact. While Perkins Lot was designated a significant scenic resource, it is anticipated that many hikers will turn back after reaching the Bald Mountain summit, which is reached prior to entering Perkins Lot. The upper portions of 8 turbines will be visible. Though this is one of the closer potential viewpoints, they will occupy only a small portion of the horizontal field of view—about the width of a thumb held at arm's length. The sensitivity of visitors to Perkins Lot is anticipated to be similar to hikers to the Mount Blue summit. Those hikers reported that on average the view of the turbines would not effect their enjoyment or likelihood of returning to the summit. Based on these findings, the overall impact is expected to be very slightly Adverse, but not even approaching Unreasonable.

4.12 Summary of Impacts

Table 8 summarizes the above findings from applying the scenic impact evaluation criteria to the 10 resources identified within 8 miles of a turbine and possibly having state or national significance as a scenic resource.

Table 8. Summary of Evaluation Criteria Ratings for the Saddleback Ridge Wind Project

Scenic Resources of State or National Significance in the Surrounding Area	Scenic Impact Evaluation Criteria							Overall Scenic Impact
	A	B	C	D	E.1	E.2	F	
Historic Sites								
John G. Coburn House ‡	—	—	—	—	—	—	—	None
Goodspeed Memorial Library	*	*	*	*	*	*	0	None
Bass Boarding House †	*	*	*	*	*	*	0	None
North Jay Grange Store †	Low	Medium	Low	Medium	None-Low	None-Low	None-Low	None
Jay-Niles Memorial Library	Low	Medium	Low	Medium	None-Low	None-Low	Low	None-Low
Temple Intervale School †	*	*	*	*	*	*	0	None
Weld Town Hall	*	*	*	*	*	*	0	None
State Parks								
Mount Blue SP—Mt Blue summit	Med.-High	Med.-High	Med.-High	Medium	Low-Med.	None-Low	Low	Low-Med.
Mount Blue SP—Center Hill Ledges	Med.-High	Med.-High	Medium	Medium	Medium	None-Low	Low	Low-Med.
Mount Blue SP—Farmhouse Turnout	Med.-High	Medium	Low-Med.	Medium	Low	None-Low	Low	Low-Med.
Mount Blue SP—Webb Lake Beach	Med.-High	Med.-High	Medium	Medium	Med.-High	None	0	None
Mount Blue SP—shoreline north of Beach	Med.-High	Medium	Medium	Medium	Low	None-Low	None-Med.	None-Low
Great Ponds								
Halfmoon Pond	Medium	Low	Low	Medium	Low	None-Low	None-Low	None-Low
Maine Public Reserve Land								
Perkins Lot—Bald Mountain near summit	Low	Low-Med.	Medium	Medium	Low	None-Low	Low	Low

Notes: The Evaluation Criteria are: (A) Significance of resource, (B) Character of surrounding area, (C) Typical viewer expectation, (D) Development's purpose and context, (E.1) Extent, nature & duration of uses, (E.2) Effect on continued use and enjoyment, and (F) Scope and scale of project views.

‡ Not a state or nationally significant scenic resource because it is privately owned place without public legal right of access.

† Privately owned place with undetermined public legal right of access.

* Since there is no project visibility, there is no scenic impact.

5. Summary and Conclusions

This review begins with a discussion of Maine's Wind Energy Act's and how its new scenic evaluation procedures might be implemented through a traditionally structured visual impact assessment (VIA) report. The review then evaluates the adequacy of the *Visual Impact Assessment: Saddleback Ridge Wind Project, Carthage, Maine* (TJD&A 2010). Overall this VIA is accurate and clearly presented. Additional fieldwork and analysis completed for this review generally supports this conclusion. A framework based on the Wind Energy Act's evaluation criteria is systematically applied to all of the state and nationally significant scenic resources.

The scenic impact to the state and nationally significant scenic resources is Adverse at some locations, but does not rise to the level of Unreasonably Adverse.

- The overall scenic impact to two historic sites (North Jay Grange Store and Jay-Niles Memorial Library) was found to be none to low because scenic quality did not play a role in their designation as significant resources or in their primary use, and the turbines were only partially visible at a great distance. The overall scenic impact is very low.
- Mount Blue State Park was found to have moderate to high significance as a scenic resource. However there are relatively few areas within the park with potential views of the project. Mount Blue's summit is assumed to have the highest quality view with the most sensitive users. A survey of users found that while the project would decrease scenic quality for users looking in their direction, it would not significantly change their experience or keep them from returning. The closest potential viewpoint to the project (shoreline north of the "Beach" near the Northern Group Shelter) was anticipated to have few users. The area with larger numbers of users and an unobstructed view of the project (Farmhouse Turnout) was far away and users were at the viewpoint to park their car and move on to other activities. The scenic impact to these and only a few other locations indicate an overall scenic impact to Mount Blue State Park is low to medium.
- Halfmoon Pond has medium significance, but its surrounding context has low scenic quality. Only portions of turbine blades will be visible in the top of the canopy vegetation on the further shore. Users an not expected to be highly sensitive to visual impacts, given the visual quality of the surrounding context and the area's common activities. The overall scenic impact is very low.
- Perkins Lot designated as a scenic resource, but does not include the summit of Bald Mountain, which is the primary scenic attraction. There is an understanding with a private land owner that access is allowed, as long as the trail is not promoted. The type of user is expected to be similar to the users on Mount Blue, except that there will be fewer of them. While the viewpoint is closer than Mount Blue, only the upper portions of turbines will be visible, and because the viewpoint is looking down the line of turbines they will occupy only a small area of the visual field. As a result, the overall scenic impact is low.

The preparation of this review has resulted several observations and recommendations are worth repeating.

1. The Wind Energy Act's evaluation criteria are so succinct as to be somewhat ambiguous. **The primary permitting authorities should further refine the evaluation so they are**

unambiguously understood, accurately applied and usefully interpreted. This should include identifying indicator thresholds that distinguish between Unreasonably Adverse, Adverse, and Not Adverse scenic impacts.

2. The Wind Energy Act does not explicitly address questions relating to cumulative impacts from wind energy development. Saddleback Ridge Wind Power is approximately 13 miles to the west of 19 turbines proposed in the Black Mountain Wind Project and about 18 miles to the southwest of the 10 turbines proposed for the Spruce Mountain Wind Project. Patriot Renewables is exploring a 13 turbine project about 5 miles to the south on Colonel Holman Mountain in Dixfield (Adams 2011). **The primary permitting authorities should investigate the issues associated with cumulative scenic impacts from wind energy development, determine how these issues can be addressed under the law, and provide guidance about the evaluation of cumulative scenic impacts.**

3. The VIA study area is set at 8 miles from the wind turbines. However the project transmission line extends beyond this study area and it is a component of the Generation Facilities that also must be evaluated. As sit turns out, there is no state or nationally significant scenic resource within this additional area. **Future VIAs must explicitly consider all Generation Facilities when establishing the study area.**

4. The VIA correctly identifies all state or nationally significant scenic resources based on the Wind Energy Act's standards. However, it also includes privately owned sites where the public apparently does not have a legal right of access, and would there fore not qualify a significant scenic resources. **Future VIAs must clarify whether the public has a legal right of access on privately owned sites that would otherwise qualify as significant scenic resources.**

5. Assumptions made about vegetation height significantly effect a visibility analysis. The VIA chose to assign heights to certain wetlands and harvested areas that could have few canopy trees to screen views. As a result, the visibility analysis may indicate that areas are screened, when they are not. **Visibility analysis should be used primarily to guide the fieldwork. As such primary emphasis should be placed on the topographic visibility man and assumptions about screening should be used cautiously so as not exclude sites with potential visibility from field investigation.**

6. The quality of the photosimulations generally appears to be high. However, the simulation of the view from Halfmoon Pond presents a difficult situation for the method used to create the simulation (i.e., use of the ridgeline to register the WindPRO drawing of the turbines to the simulation photograph when only a single small portion of a slope can be seen in the photograph). In this case, both Google Earth and ArcScene were used to validate the simulation and it was found that any possible inaccuracy would be small and unlikely to significantly effect the evaluation of scenic impact. A carefully constructed line of sight cross-section using measured heights for the effective screening vegetation would settle the question. **In situations where there may be a reasonable doubt about the accuracy of a photosimulation, the VIA should provide corroboration of its validity.**

7. Photosimulations initially were not prepared for every significant scenic resource from which potential views of the project were identified, particularly Jay-Niles Library, but also including a view from the Mount Blue State Park campground area and Center Hill "Ledges." However, this was corrected in the VIA Supplemental Information, prepared in response to reviewer requests. **Photosimulations must be prepared from a "worst case" viewpoint for all state and nationally significant scenic resources which have a potential view of Generating Facility components.**

8. No apparent effort is made to obtain information about "extent, nature and duration of potentially affected public uses of scenic resources." **Future VIAs need to obtain or develop reasonable estimates of the extent, nature and duration of use for location in significant scenic resources with potential views of Generation Facility components.**

9. The developer is to be commended for retaining a reputable survey research firm to conduct a user survey at a sensitive viewpoint. However, the survey only addressed one type of user (hiker), at one distance from the project (7.4 miles), for one type of scenic resource (mountain summit in a state park). There is little to no information about the scenic sensitivity to grid-scale wind power projects for other users (e.g., people fishing, boating, swimming, ice skating, skiing, attending an outdoor interpretive program, stopping at a scenic turnout, or using a historic site), at closer distances, and other types of scenic resources. **Future VIAs need to increase knowledge about how grid-scale wind energy projects effect the expectations, scenic perceptions, enjoyment and likelihood to return for a greater variety of scenic resource users, at different distances, and in a variety of significant scenic resources.**

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Appendix 1

Review Maps

Map 1: Transmission Line Area of Potential Effects

Map 2: Topographic Viewshed for Blade Tip

Map 3: Forested Viewshed for Blade Tip

Map 4: Forested Viewshed for Blade Tip Using TJD&A Forest Heights

Map 5: Topographic Viewshed for Turbine Hub

Map 6: Forested Viewshed for Turbine Hub

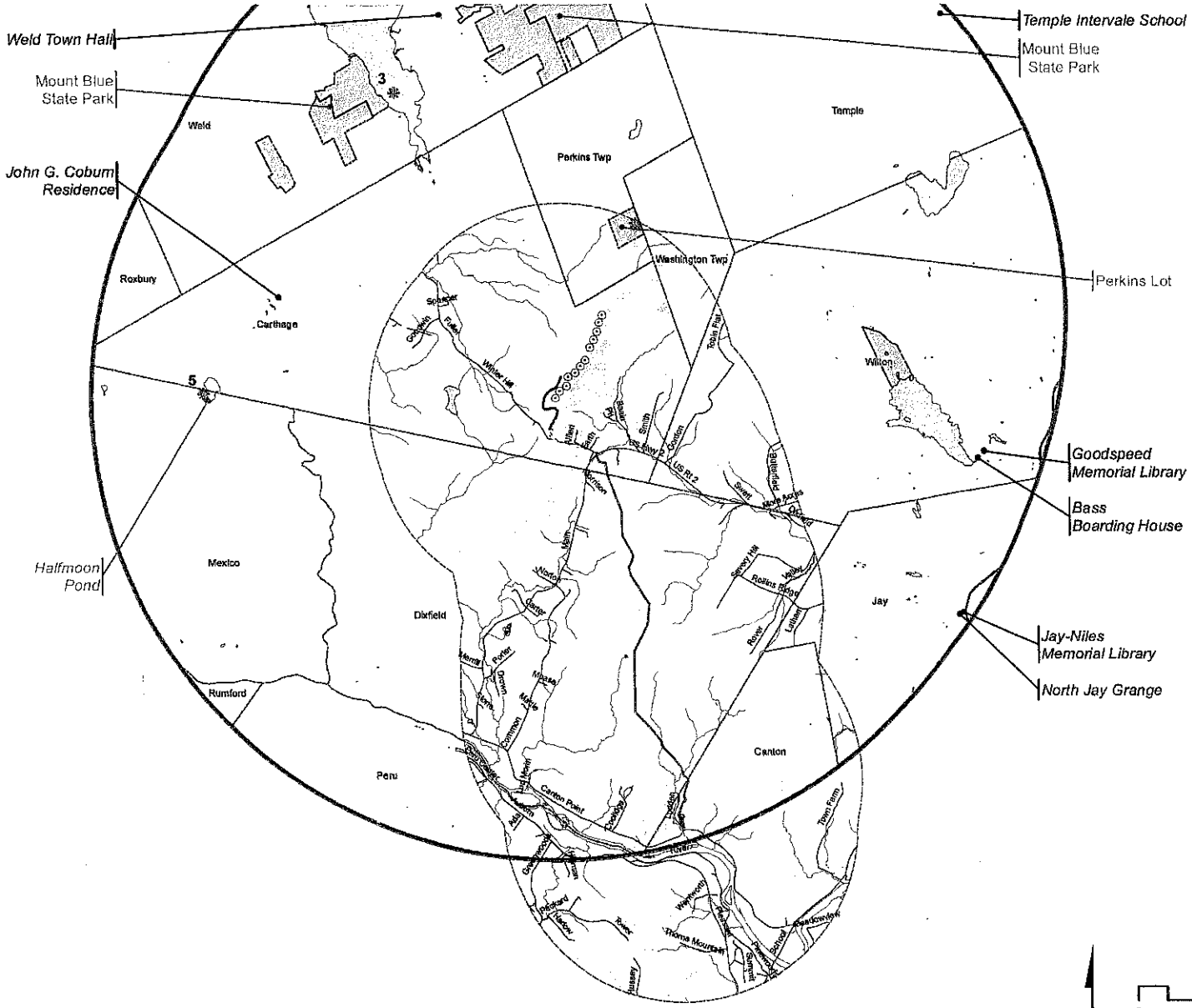
Map 7: Forested Viewshed for Turbine Hub Using TJD&A Forest Heights

Visibility analysis determines whether a line-of-sight exists between two specified points. A geographic information system (GIS) is used to map the viewsheds from which the Saddleback Ridge turbines are potentially visible. In principle this is an objective exercise in geometry highly suited to a computer application. In practice however, since the data are only approximations of the actual condition and may include errors, the resulting viewshed maps are best considered a preliminary analysis of potential visibility under specified conditions. The maps are useful for providing a preliminary investigation of the overall potential visual impact. If potential visual impacts appear to exist for significant scenic resources, they need to be confirmed through field investigation and other visualization techniques.

Map 1
Transmission Line
Area of Potential Effects

Saddleback Ridge Wind Project

Carthage, Maine

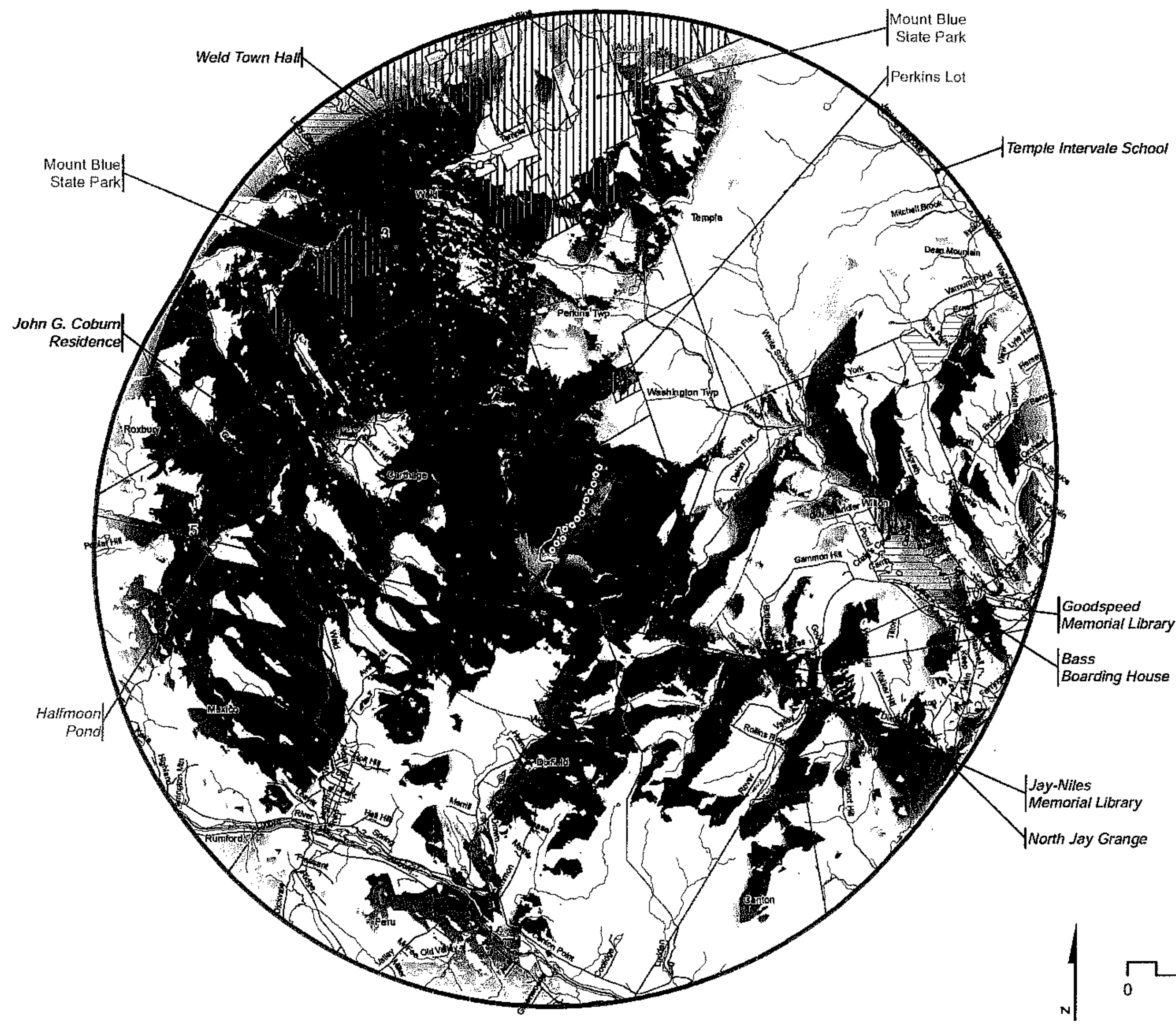


Map 2
Topographic Viewshed for Blade Tip

Saddleback Ridge Wind Project

Carthage, Maine

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field



Legend

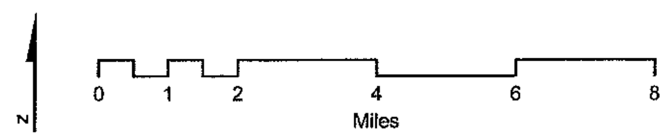
- Turbine Locations
- TJD&A Simulation Locations
- 34.5 kV & 115 kV Transmission Lines
- Roads
- Rivers/Streams
- Lakes

Number of Blade Tips Visible (135 Meters)

1 2 3 4 5 6 7 8 9 10 11 12

State or Nationally Significant Scenic Resources

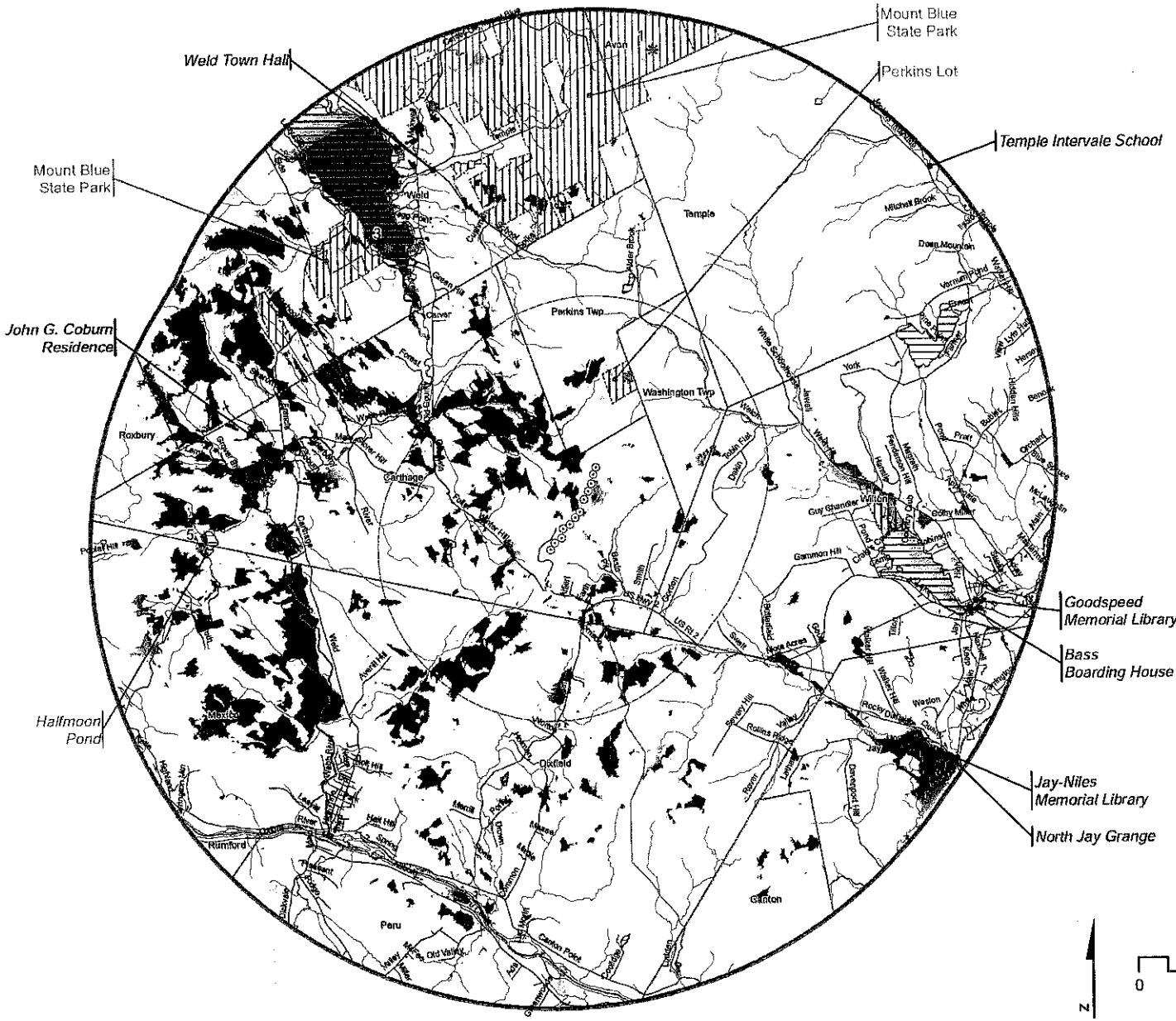
- *Great Ponds*
- *Historic Places*
- State Parks, Public Reserved Lands or Trails



Map 3
Forested Viewshed for Blade Tip

Saddleback Ridge Wind Project

Carthage, Maine



GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field

Legend

- Turbine Locations
- TJD&A Simulation Locations
- 34.5 kV & 115 kV Transmission Lines
- Roads
- Rivers/Streams
- Lakes

Number of Blade Tips Visible (135 Meters)

1 2 3 4 5 6 7 8 9 10 11 12

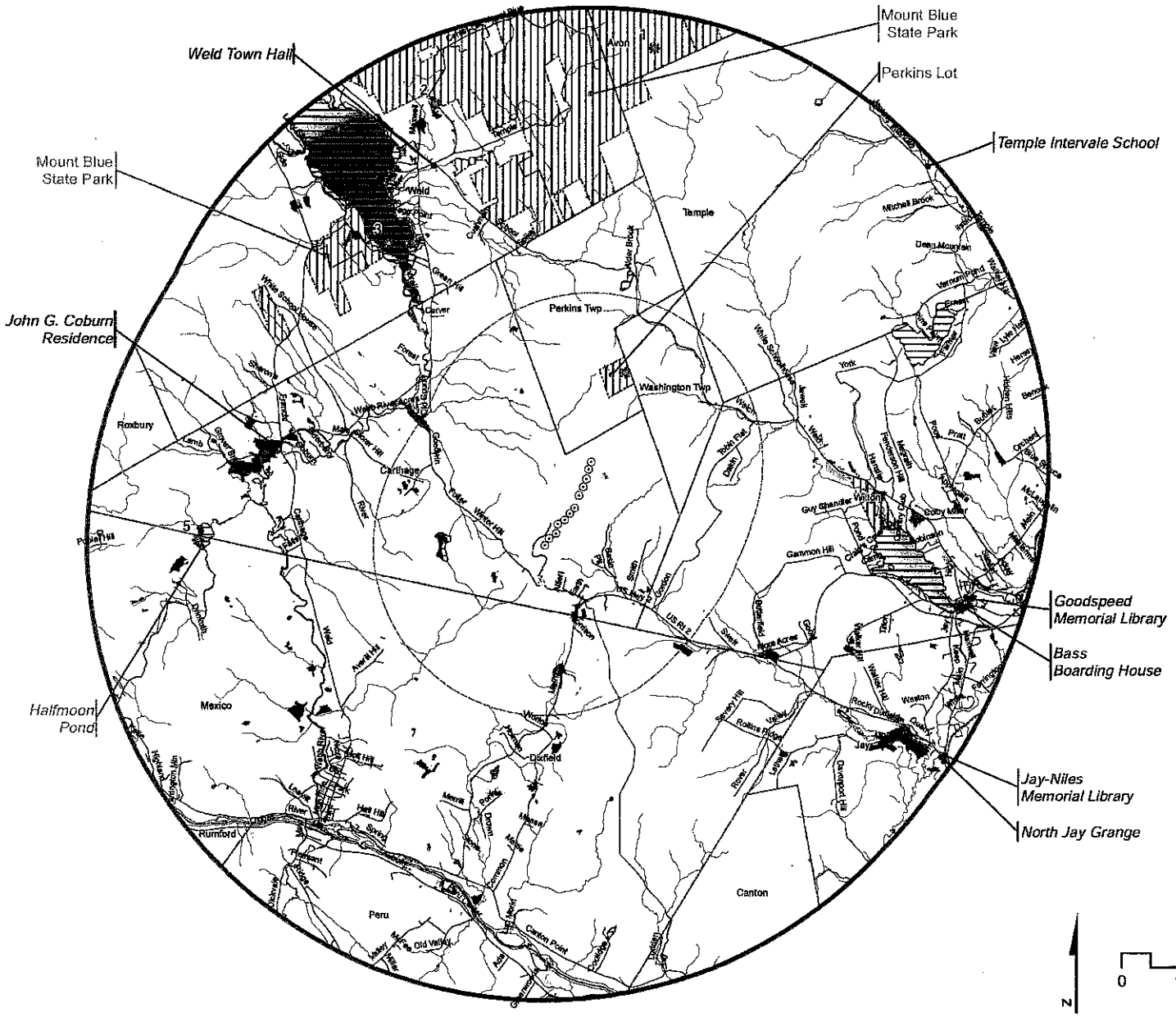
State or Nationally Significant Scenic Resources

- *Great Ponds*
- *Historic Places*
- State Parks, Public Reserved Lands or Trails

N

0 1 2 4 6 8

Miles



Map 4
Forested Viewshed for Blade Tip Using TJD&A Forest Heights

Saddleback Ridge Wind Project

Carthage, Maine

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field

Legend

- Turbine Locations
- TJD&A Simulation Locations
- 34.5 kV & 115 kV Transmission Lines
- Roads
- Rivers/Streams
- Lakes

Number of Blade Tips Visible (135 Meters)

1 2 3 4 5 6 7 8 9 10 11 12

State or Nationally Significant Scenic Resources

- Great Ponds
- Historic Places
- State Parks, Public Reserved Lands or Trails

N

0 1 2 4 6 8

Miles

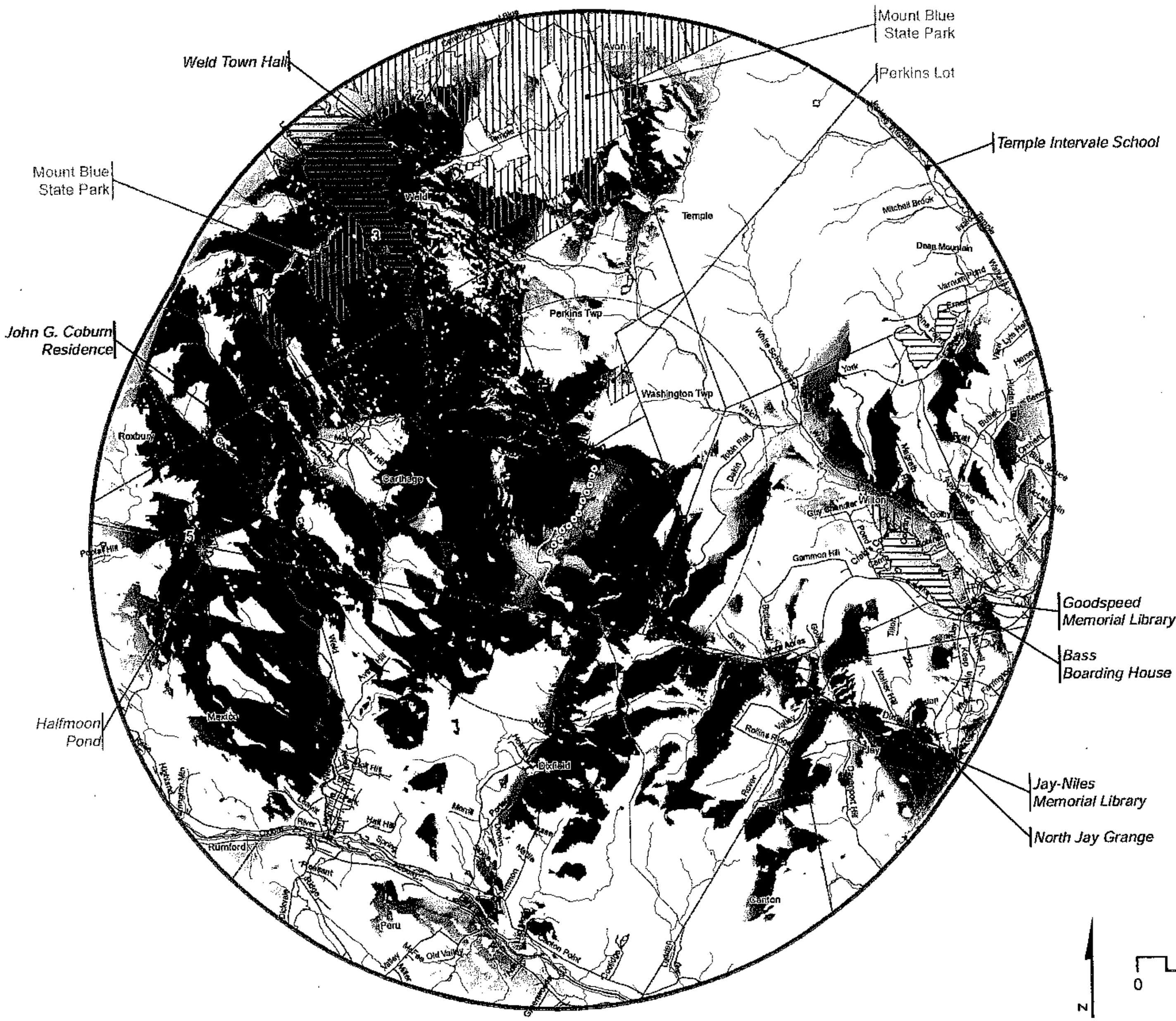
1267

Map 5
Topographic Viewshed for Turbine Hub

Saddleback Ridge Wind Project

Carthage, Maine

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field



Legend

- ⊙ Turbine Locations
- ❋ TJD&A Simulation Locations
- 34.5 kV & 115 kV Transmission Lines
- Roads
- Rivers/Streams
- Lakes

Number of Turbine Hubs Visible (85 Meters)

1 2 3 4 5 6 7 8 9 10 11 12

State or Nationally Significant Scenic Resources

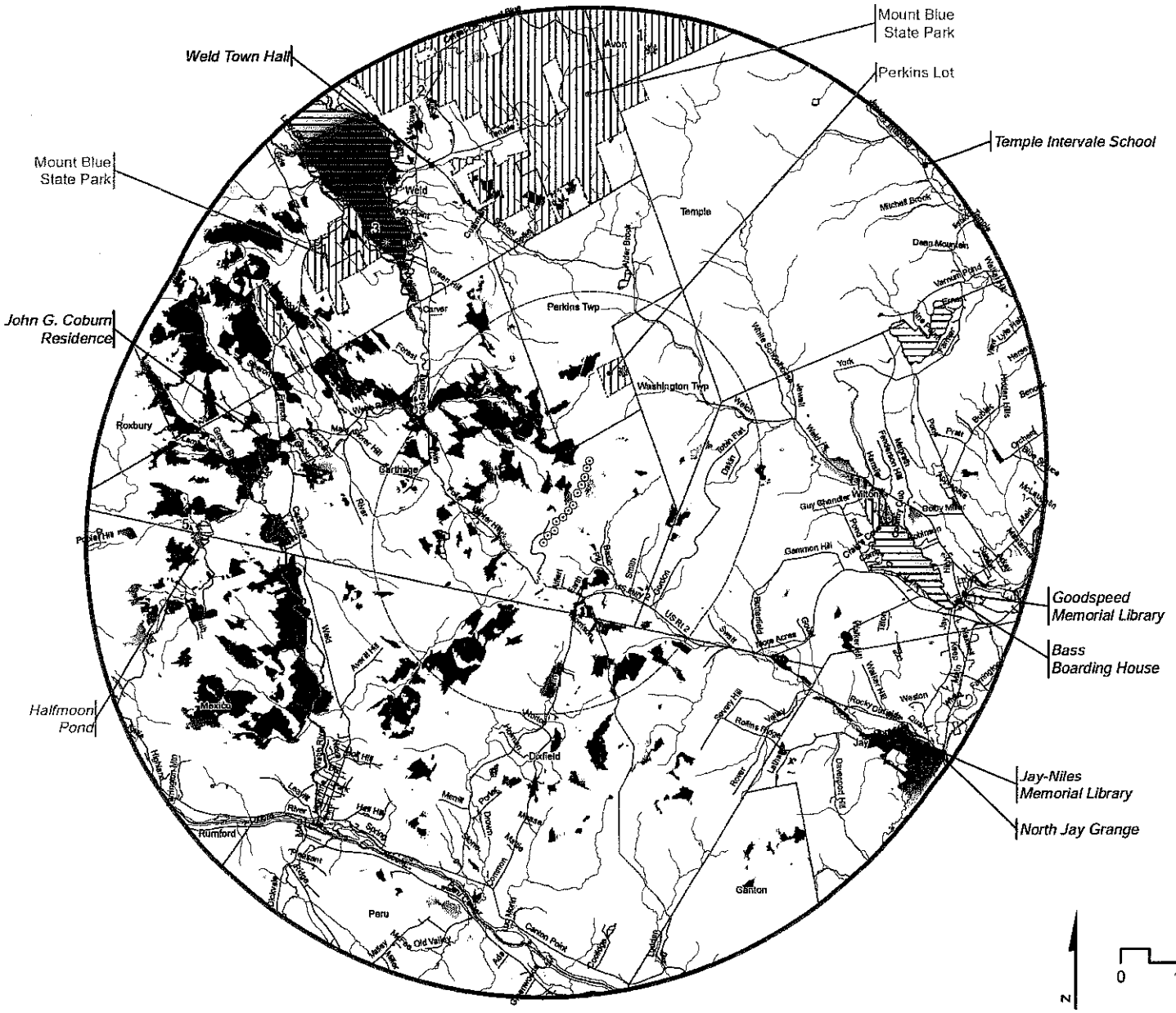
Great Ponds

Historic Places

State Parks, Public Reserved Lands or Trails

N

0 1 2 4 6 8
Miles



Map 6

Forested Viewshed for Turbine Hub

Saddleback Ridge Wind Project

Carthage, Maine

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field

Legend

- Turbine Locations
- TJD&A Simulation Locations
- 34.5 kV & 115 kV Transmission Lines
- Roads
- Rivers/Streams
- Lakes

Number of Turbine Hubs Visible (85 Meters)

1 2 3 4 5 6 7 8 9 10 11 12

State or Nationally Significant Scenic Resources

- *Great Ponds*
- *Historic Places*
- State Parks, Public Reserved Lands or Trails

N

0 1 2 4 6 8

Miles

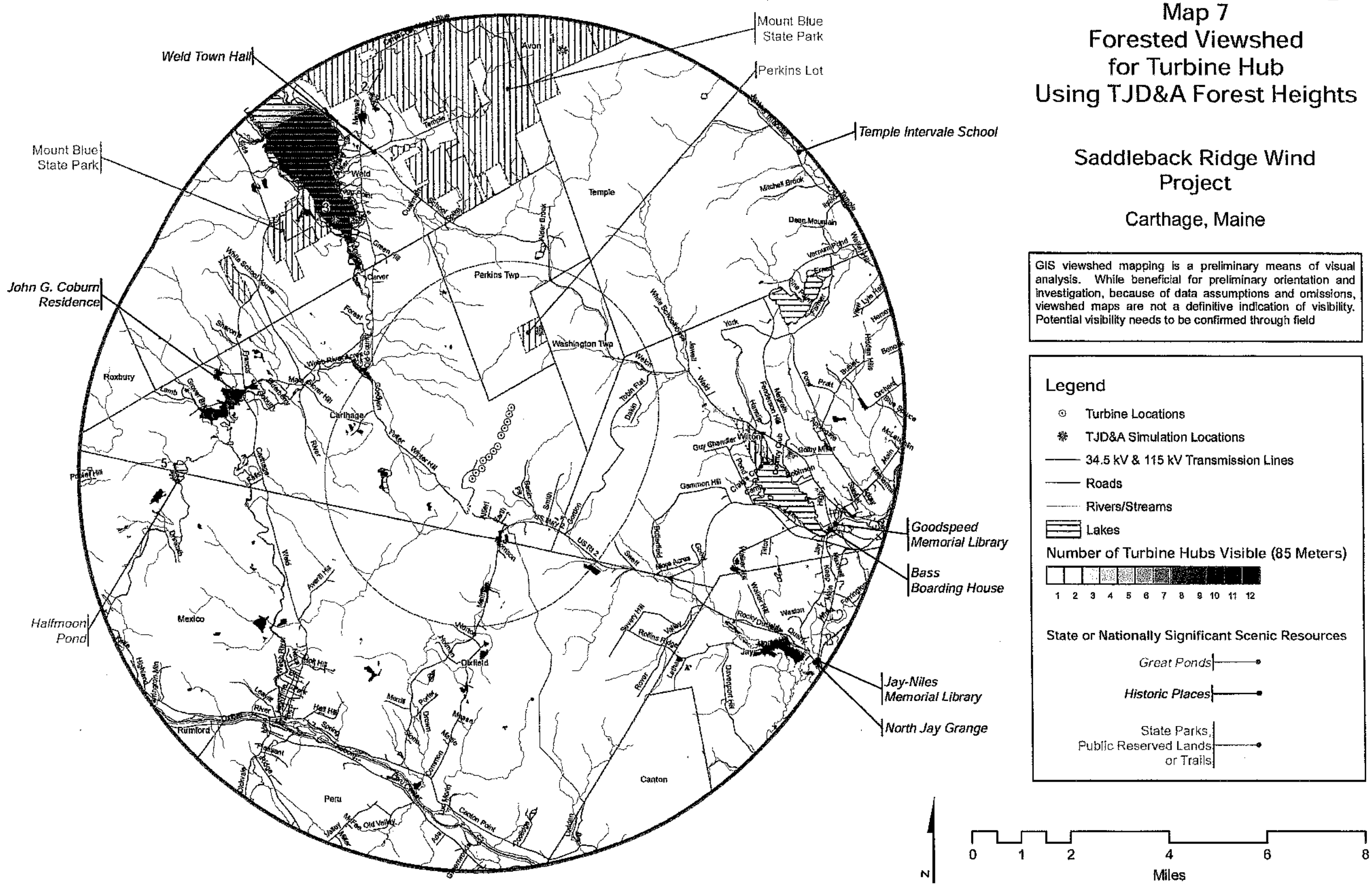
1269

Map 7
Forested Viewshed for Turbine Hub Using TJD&A Forest Heights

Saddleback Ridge Wind Project

Carthage, Maine

GIS viewshed mapping is a preliminary means of visual analysis. While beneficial for preliminary orientation and investigation, because of data assumptions and omissions, viewshed maps are not a definitive indication of visibility. Potential visibility needs to be confirmed through field



Appendix 2

ArcScene Visualizations

Visualization 1: Mount Blue State Park—Mount Blue Summit

Visualization 2: Mount Blue State Park—Center Hill "Ledges"

Visualization 3: Mount Blue State Park—Farmhouse Turnout

Visualization 4: Mount Blue State Park—Shoreline North of the "Beach."

Visualization 5: Perkins Lot

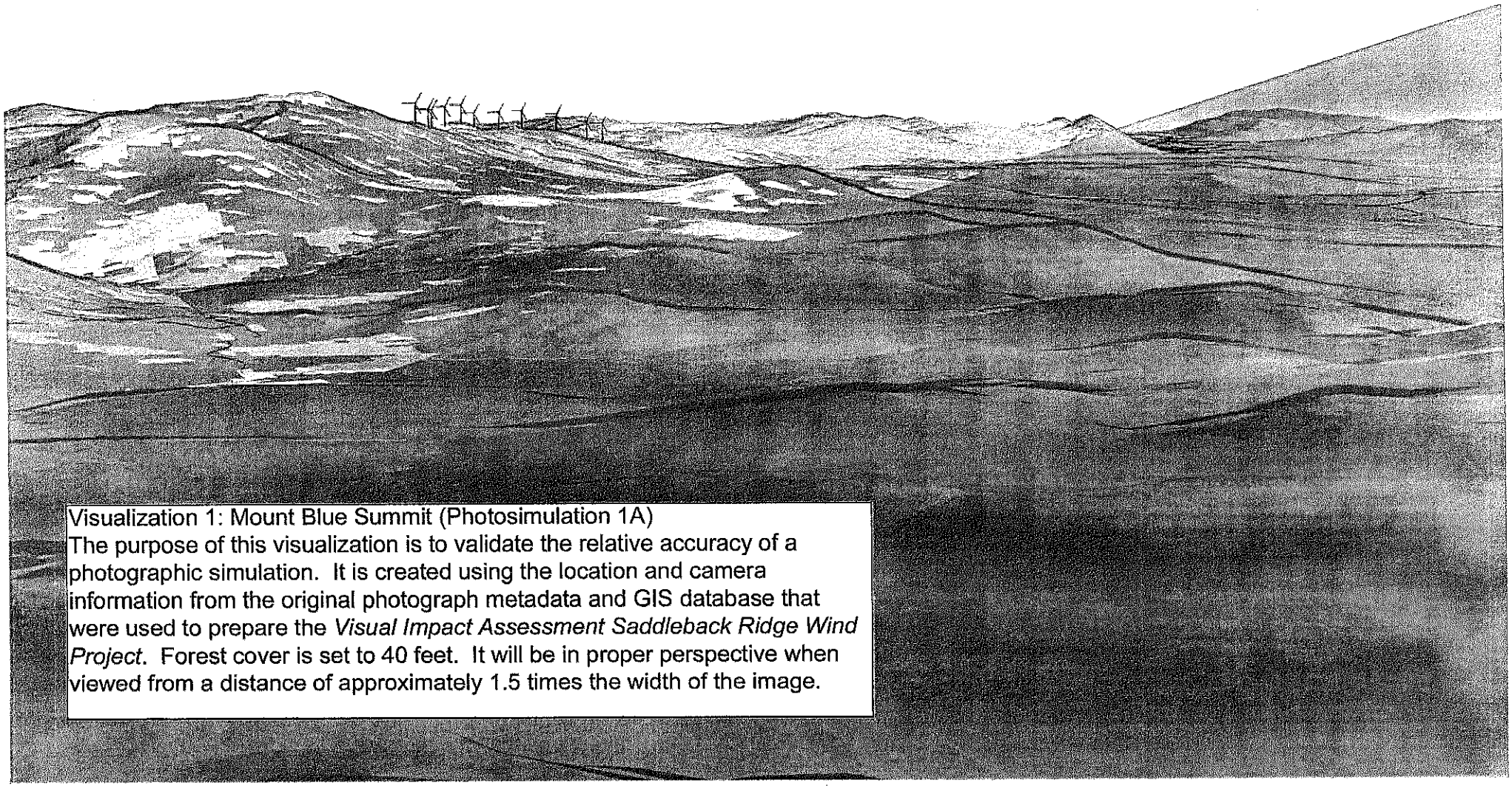
Visualization 6a: Halfmoon Pond—40 foot forest

Visualization 6b: Halfmoon Pond—60 foot forest

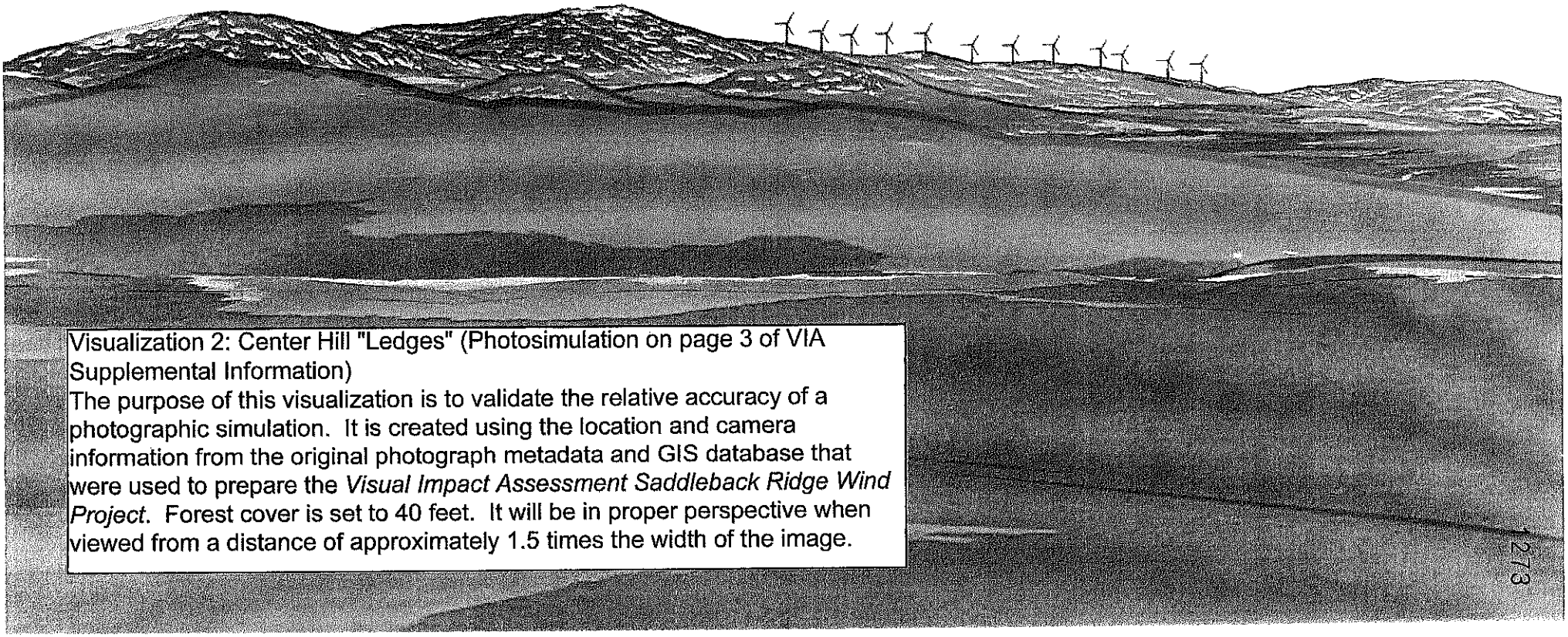
Visualization 7: North Jay Grange Store

Visualization 8: Jay-Niles Memorial Library

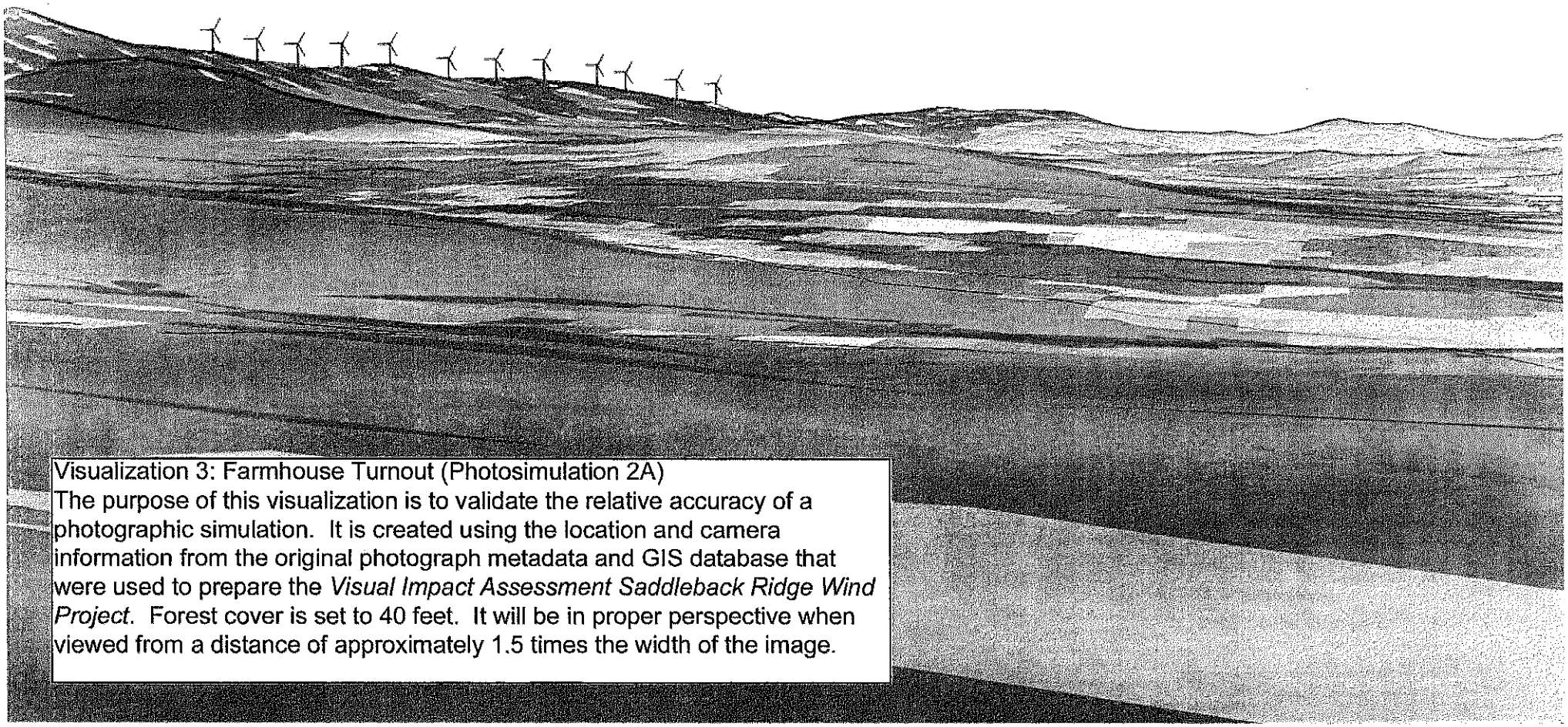
The purpose of these visualizations is to validate the relative accuracy of the *Visual Impact Assessment Saddleback Ridge Wind Project, Carthage, Maine* (TJD&A 2010) and the *Visual Impact Assessment Supplemental Information* (TJD&A 2011) photographic simulations. They are created using the location and camera information from the photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to between 40 and 60 feet. The representation of foreground vegetation may not be accurate. The visualizations are in proper perspective when viewed from a distance of approximately 1.5 times it width.



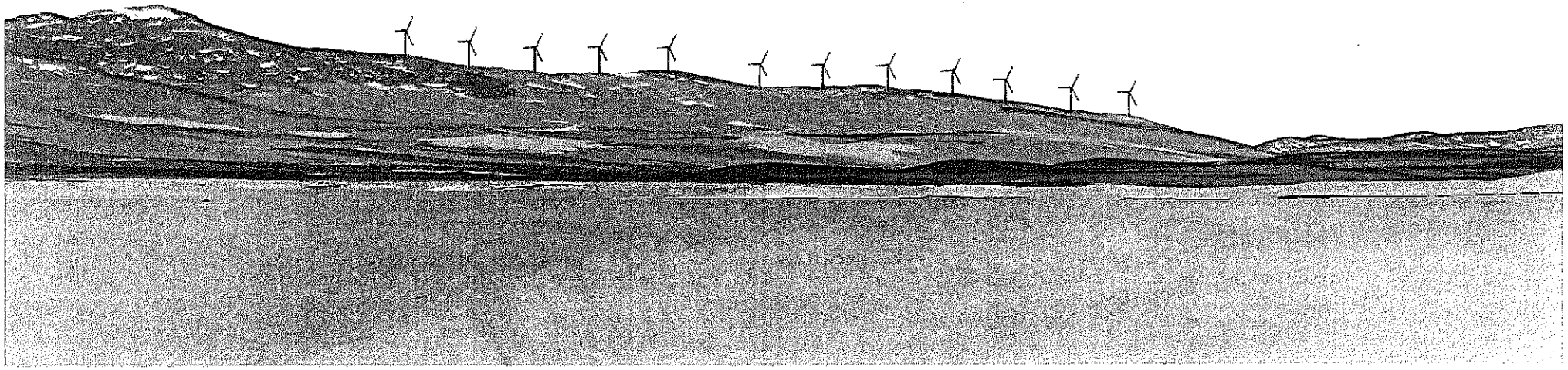
Visualization 1: Mount Blue Summit (Photosimulation 1A)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



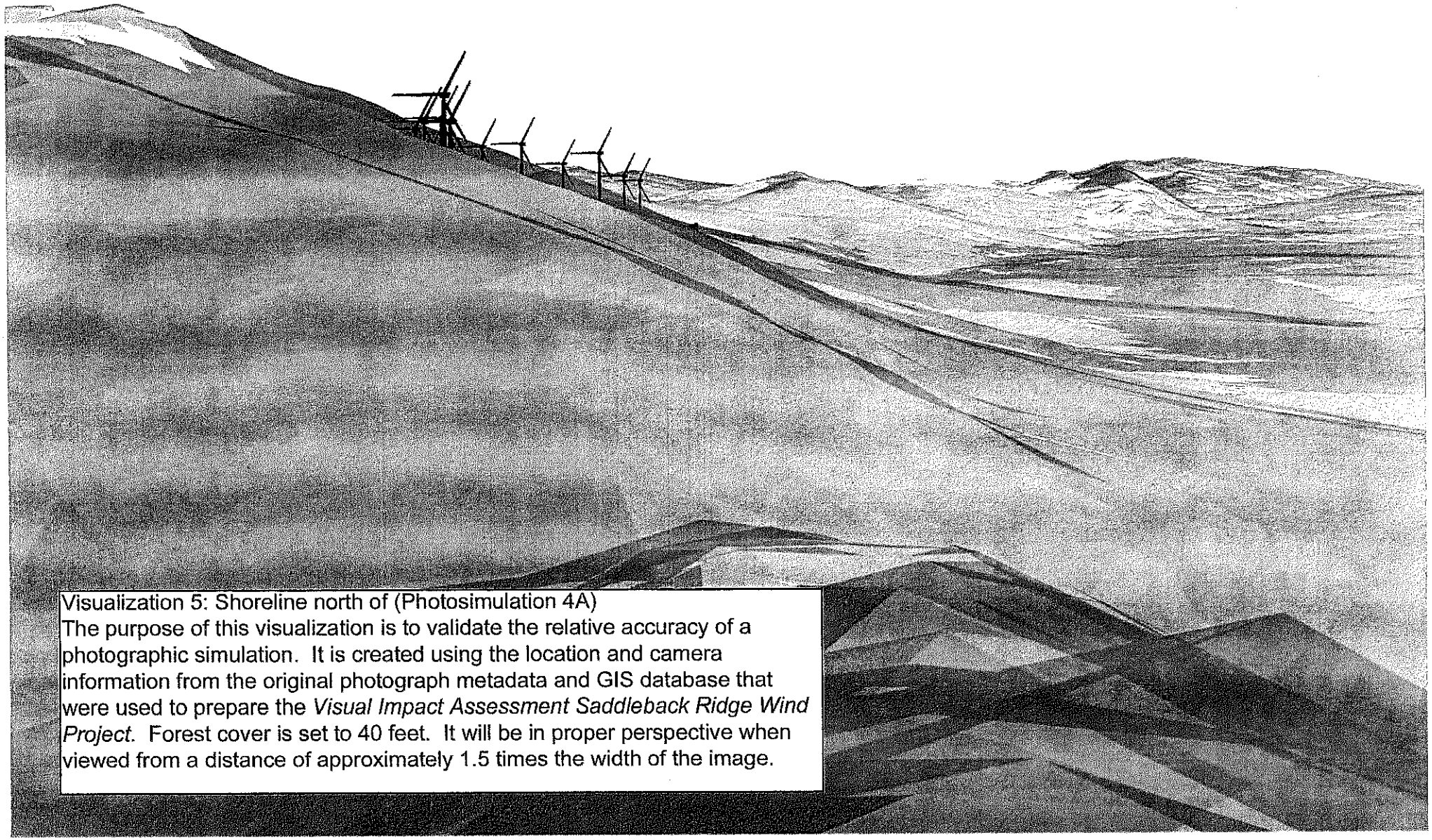
Visualization 2: Center Hill "Ledges" (Photosimulation on page 3 of VIA Supplemental Information)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



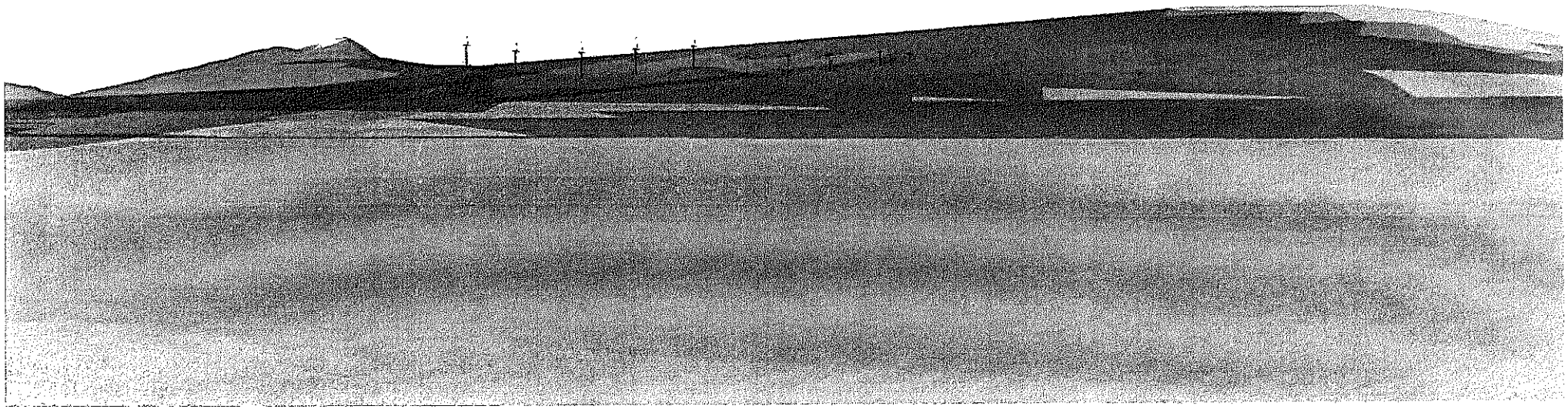
Visualization 3: Farmhouse Turnout (Photosimulation 2A)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



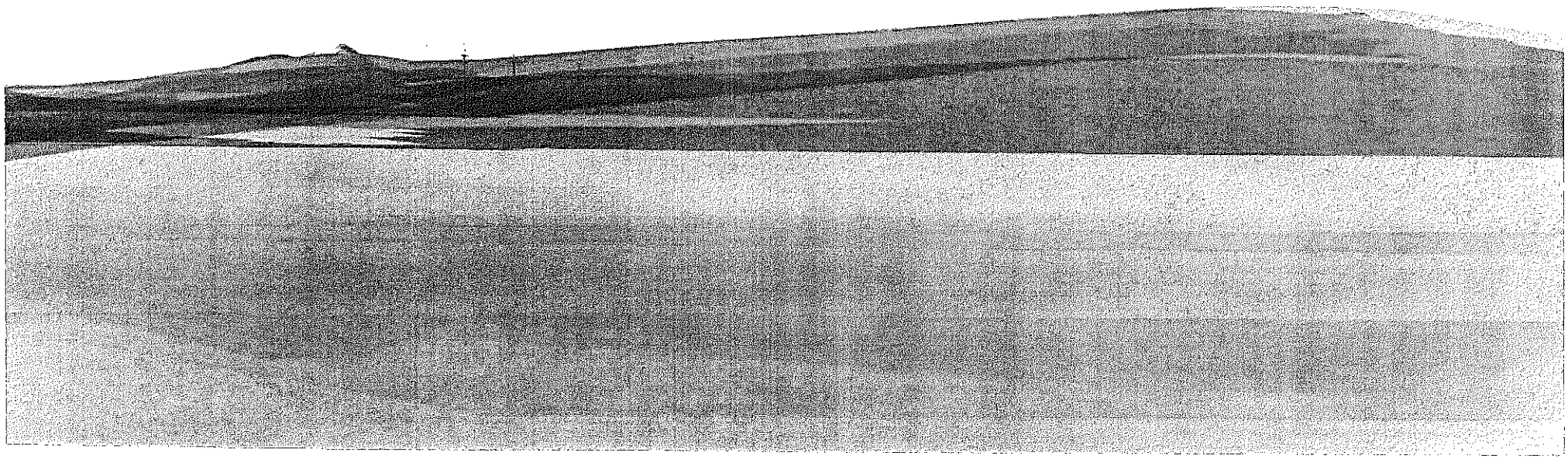
Visualization 4: Shoreline north of Mount Blue State Park (Photosimulation on page 8 of VIA Supplemental Information, and similar to Photosimulation 3A) The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



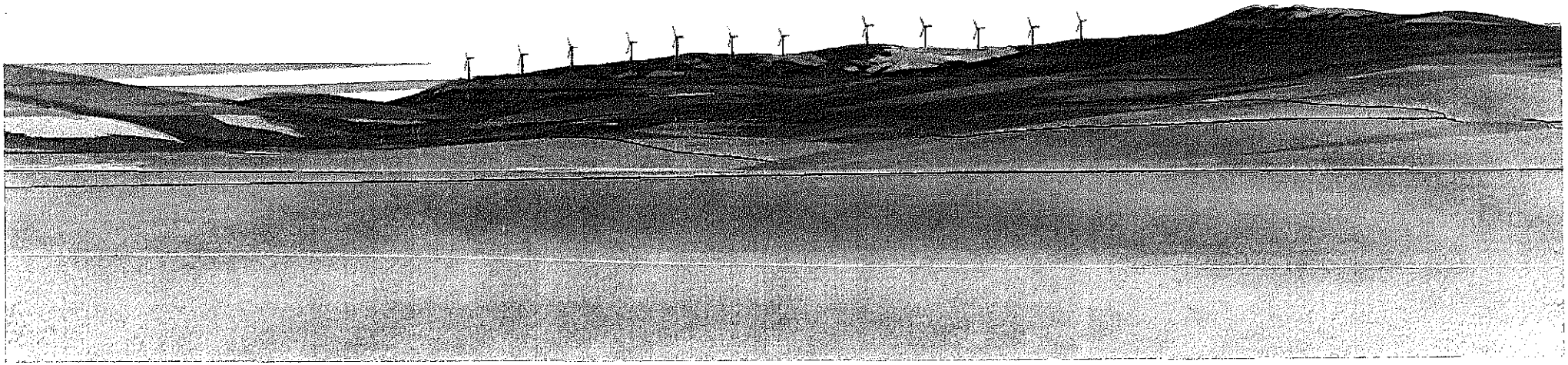
Visualization 5: Shoreline north of (Photosimulation 4A)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



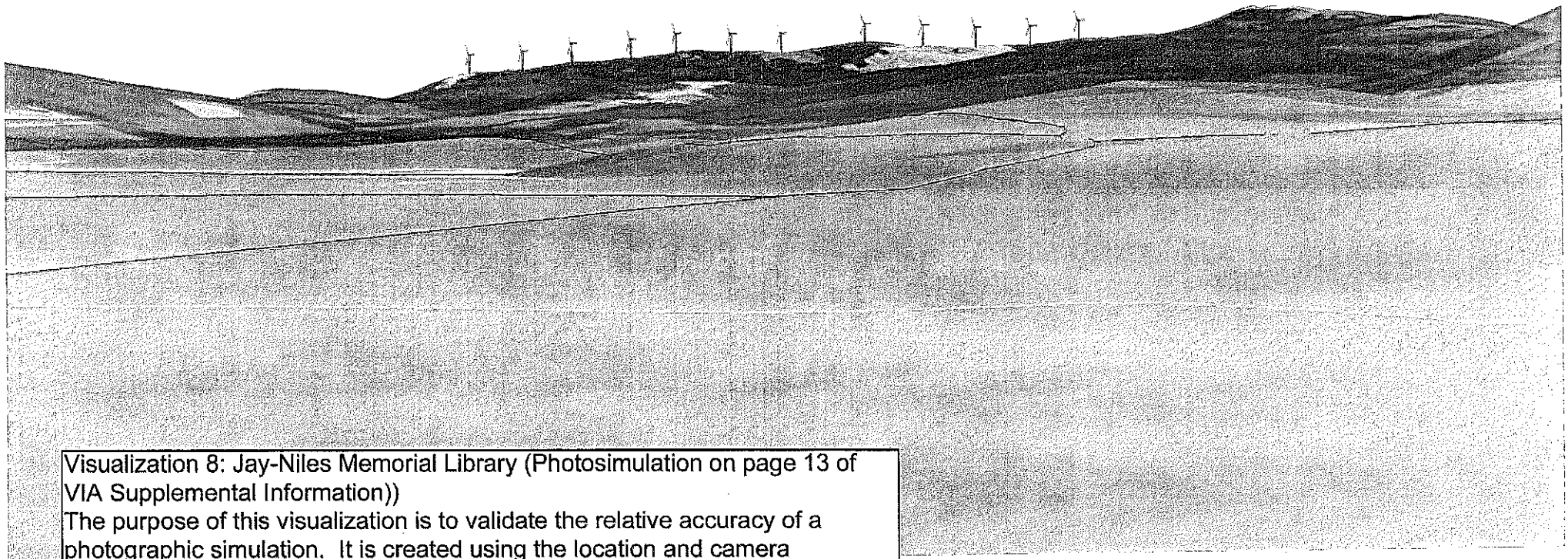
Visualization 6a: Shoreline north of Mount Blue SP (Photosimulation 5A)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project.* Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



Visualization 6b: Halfmoon Pond (Photosimulation 5A)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 60 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



Visualization 7: North Jay Grange Store (no Photosimulation)
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.



Visualization 8: Jay-Niles Memorial Library (Photosimulation on page 13 of VIA Supplemental Information))
The purpose of this visualization is to validate the relative accuracy of a photographic simulation. It is created using the location and camera information from the original photograph metadata and GIS database that were used to prepare the *Visual Impact Assessment Saddleback Ridge Wind Project*. Forest cover is set to 40 feet. It will be in proper perspective when viewed from a distance of approximately 1.5 times the width of the image.